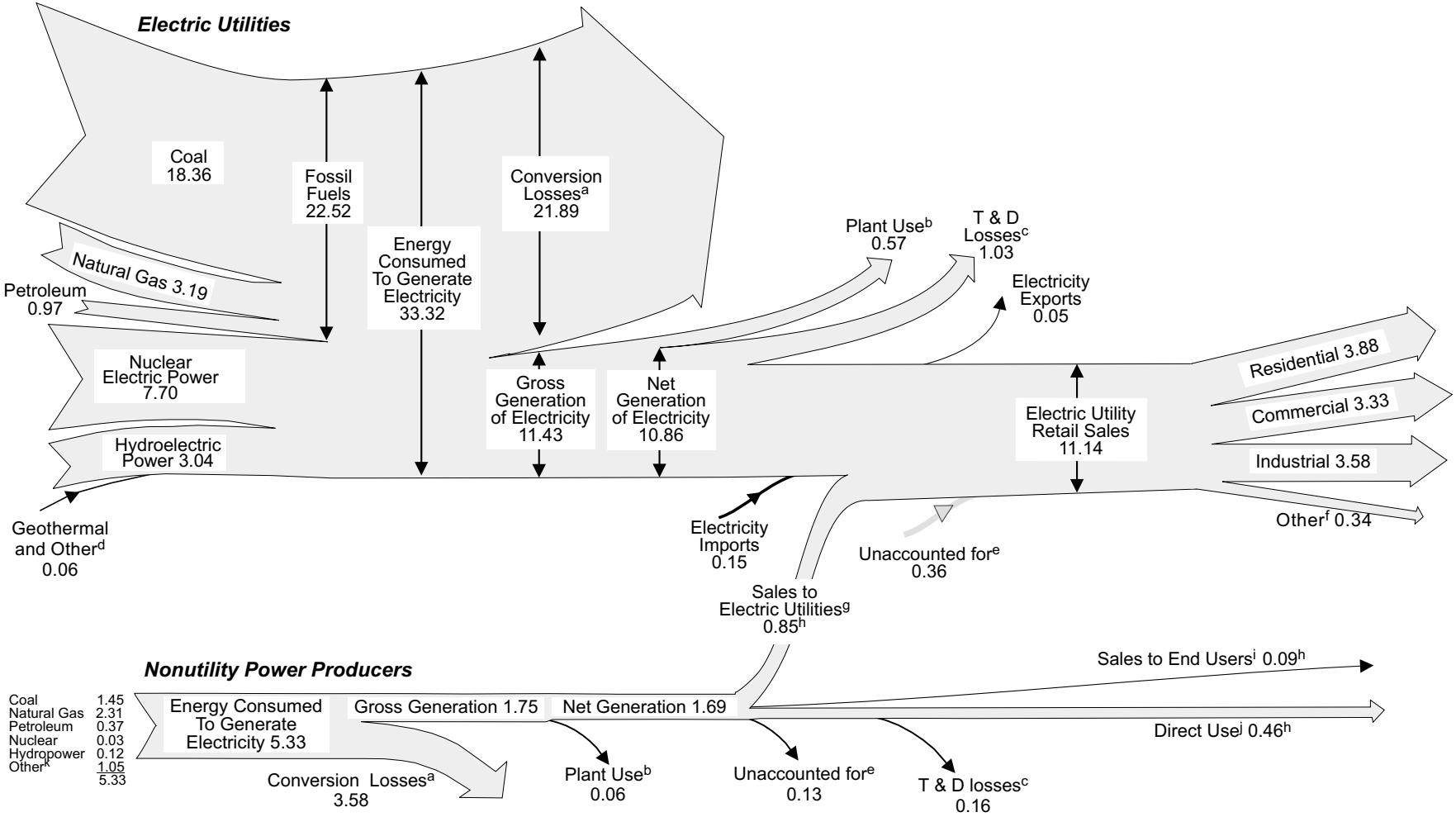
8 Electricity

High-tension power lines and towers. Source: U.S. Department of Energy.

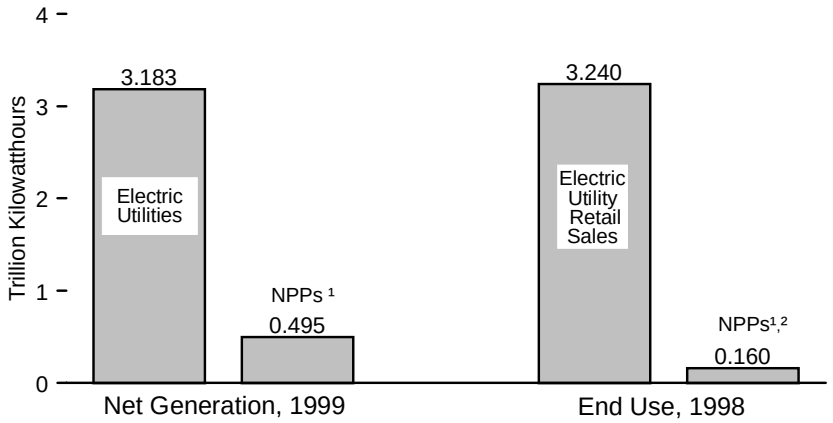
Diagram 5. Electricity Flow, 1999
(Quadrillion Btu)



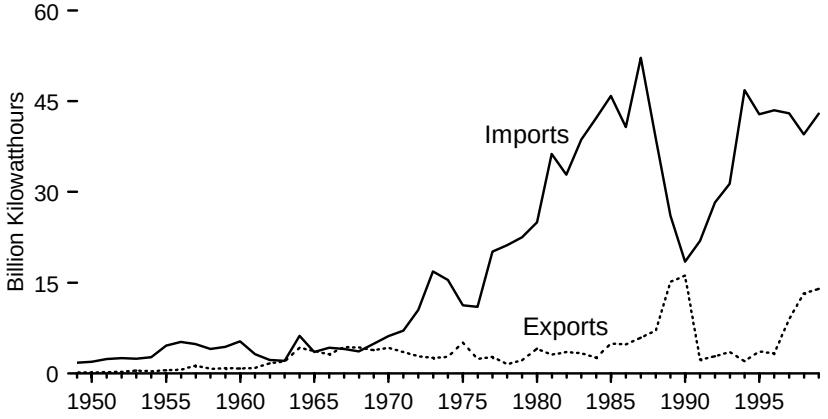
[a] Approximately two-thirds of all energy used to generate electricity. See Note 1 at end of section.
[b] The electric energy used in the operation of power plants. For utilities, plant use is estimated as 5 percent of gross generation. See Note 1 at end of section.
[c] Transmission and distribution losses are estimated as 9 percent of gross generation of electricity. See Note 1 at end of section.
[d] Wood, waste, wind, and solar energy used to generate electricity. See Table 8.3.
[e] Balancing item to adjust for 1998 data used to estimate 1999 values for some small series; data collection frame differences; and nonsampling error.
[f] Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.
[g] Sales, interchanges, and exchanges of electric energy with utilities.
[h] 1999 data not available; this is the 1998 value.
[i] Includes sales, interchanges, and exchanges of electric energy with other nonutilities.
[j] Direct use is facility use of onsite net electricity generation.
[k] Geothermal, wood, waste, wind, and solar energy used to generate electricity.
See Table 8.4.
Note: Totals may not equal sum of components due to independent rounding.
Sources: Tables 8.1, 8.3, 8.8, 8.9, 8.14, and A6.

Figure 8.1 Electricity Overview

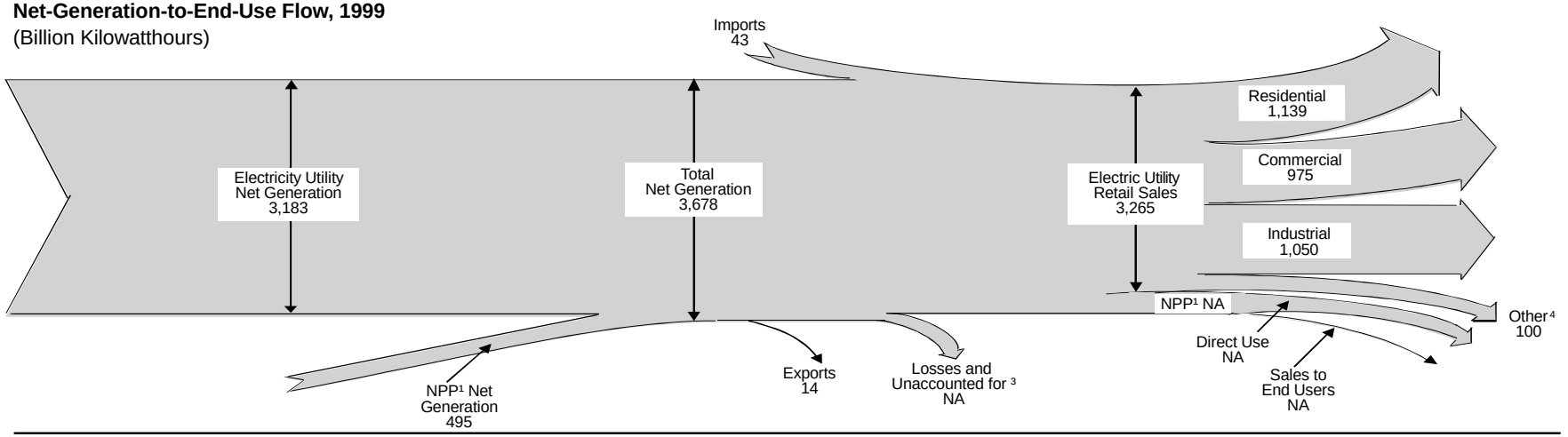
Net Generation and End Use



Electricity Trade, 1949-1999



Net-Generation-to-End-Use Flow, 1999
(Billion Kilowatthours)



1 Nonutility power producers. See Glossary.

2 Direct use and sales to end users.

3 Energy losses that occur between the point of generation and delivery to the customer, and data collection frame differences and nonsampling error.

4 Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

NA=Not available.

Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.1 and 8.9.

Table 8.1 Electricity Overview, 1949-1999

(Billion Kilowatthours)

Year	Net Generation			Imports [1]	Exports [1]	Losses and Unaccounted for [2]	End Use			
	Electric Utilities	Nonutility Power Producers	Total				Electric Utility Retail Sales	Nonutility Power Producers		
								Direct Use [3]	Sales to End Users	Total
1949	291	NA	291	2	(s)	NA	255	NA	NA	NA
1950	329	NA	329	2	(s)	NA	291	NA	NA	NA
1951	371	NA	371	2	(s)	NA	330	NA	NA	NA
1952	399	NA	399	3	(s)	NA	356	NA	NA	NA
1953	443	NA	443	2	(s)	NA	396	NA	NA	NA
1954	472	NA	472	3	(s)	NA	424	NA	NA	NA
1955	547	NA	547	5	(s)	NA	497	NA	NA	NA
1956	601	NA	601	5	1	NA	546	NA	NA	NA
1957	632	NA	632	5	1	NA	576	NA	NA	NA
1958	645	NA	645	4	1	NA	588	NA	NA	NA
1959	710	NA	710	4	1	NA	647	NA	NA	NA
1960	756	NA	756	5	1	NA	688	NA	NA	NA
1961	794	NA	794	3	1	NA	722	NA	NA	NA
1962	855	NA	855	2	2	NA	778	NA	NA	NA
1963	917	NA	917	2	2	NA	833	NA	NA	NA
1964	984	NA	984	6	4	NA	896	NA	NA	NA
1965	1,055	NA	1,055	4	4	NA	954	NA	NA	NA
1966	1,144	NA	1,144	4	3	NA	1,035	NA	NA	NA
1967	1,214	NA	1,214	4	4	NA	1,099	NA	NA	NA
1968	1,329	NA	1,329	4	4	NA	1,203	NA	NA	NA
1969	1,442	NA	1,442	5	4	NA	1,314	NA	NA	NA
1970	1,532	NA	1,532	6	4	NA	1,392	NA	NA	NA
1971	1,613	NA	1,613	7	4	NA	1,470	NA	NA	NA
1972	1,750	NA	1,750	10	3	NA	1,595	NA	NA	NA
1973	1,861	NA	1,861	17	3	NA	1,713	NA	NA	NA
1974	1,867	NA	1,867	15	3	NA	1,706	NA	NA	NA
1975	1,918	NA	1,918	11	5	NA	1,747	NA	NA	NA
1976	2,038	NA	2,038	11	2	NA	1,855	NA	NA	NA
1977	2,124	NA	2,124	20	3	NA	1,948	NA	NA	NA
1978	2,206	NA	2,206	21	1	NA	2,018	NA	NA	NA
1979	2,247	NA	2,247	23	2	NA	2,071	NA	NA	NA
1980	2,286	NA	2,286	25	4	NA	2,094	NA	NA	NA
1981	2,295	NA	2,295	36	3	NA	2,147	NA	NA	NA
1982	2,241	NA	2,241	33	4	NA	2,086	NA	NA	NA
1983	2,310	NA	2,310	39	3	NA	2,151	NA	NA	NA
1984	2,416	NA	2,416	42	3	NA	2,286	NA	NA	NA
1985	2,470	NA	2,470	46	5	NA	2,324	NA	NA	NA
1986	2,487	NA	2,487	41	5	NA	2,369	NA	NA	NA
1987	2,572	NA	2,572	52	6	NA	2,457	NA	NA	NA
1988	2,704	NA	2,704	39	7	NA	2,578	NA	NA	NA
1989	2,784	[R,4]188	[R]2,972	26	15	[R]236	2,647	[4]83	[4]18	2,747
1990	2,808	[R,4]217	[R]3,025	[R]18	[R]16	[R]210	2,713	[4]84	[4]20	2,817
1991	2,825	[R,4]246	[R]3,071	[R]22	[R]2	218	2,762	[4]100	[4]11	2,873
1992	2,797	286	3,083	[R]28	[R]3	[R]224	2,763	111	11	2,885
1993	2,883	314	3,197	[R]31	[R]4	[R]236	2,861	111	16	2,988
1994	2,911	343	3,254	[R]47	[R]2	223	2,935	123	18	3,075
1995	2,995	363	3,358	[R]43	[R]4	[R]235	3,013	134	16	3,162
1996	3,077	370	3,447	[R]43	[R]3	[R]241	3,098	135	14	3,247
1997	3,123	372	3,494	[R]43	[R]9	[R]240	3,140	131	18	3,289
1998	3,212	[R]406	[R]3,618	[R]40	[R]13	[R]245	[R]3,240	[R]134	[R]26	[R]3,400
1999[P]	3,183	495	3,678	43	14	NA	3,265	NA	NA	NA

[1] Electricity transmitted across U.S. borders with Canada and Mexico.

[2] Energy losses that occur between the point of generation and delivery to the customer, and data collection frame differences and nonsampling error. See Note 1 at end of section.

[3] Facility use of onsite net electricity generation.

[4] Data for 1989-1991 were collected for facilities with capacities of 5 megawatts or more. In 1992, the threshold was lowered to include facilities with capacities of 1 megawatt or more. Estimates of the 1-to-5 megawatt range for 1989-1991 were derived from historical data. The estimation did not include retirements that occurred prior to 1992 and included only the capacity of facilities that came on line before 1992.

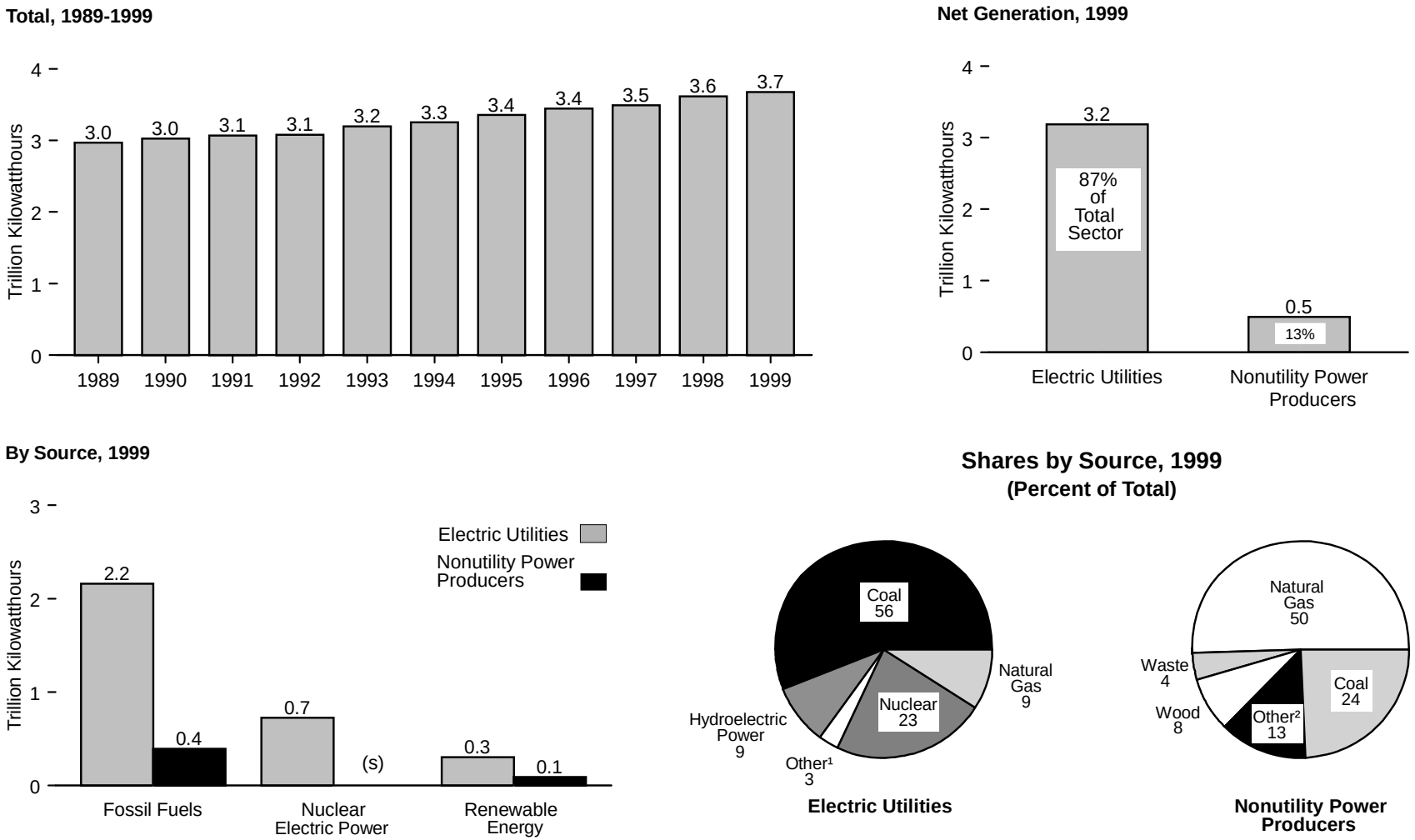
R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.5 billion kilowatthours.

Notes: • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: See end of section.

Figure 8.2 Electricity Net Generation



¹ Petroleum, geothermal, wood, waste, wind, and solar.
² Petroleum, other gas, nuclear electric power, hydroelectric power, geothermal, wind, and solar.

(s)=Less than 0.05 trillion kilowatthours.
Note: Because vertical scales differ, graphs should not be compared.
Sources: Tables 8.2, 8.3, and 8.4.

Table 8.2 Electricity Net Generation, 1989-1999

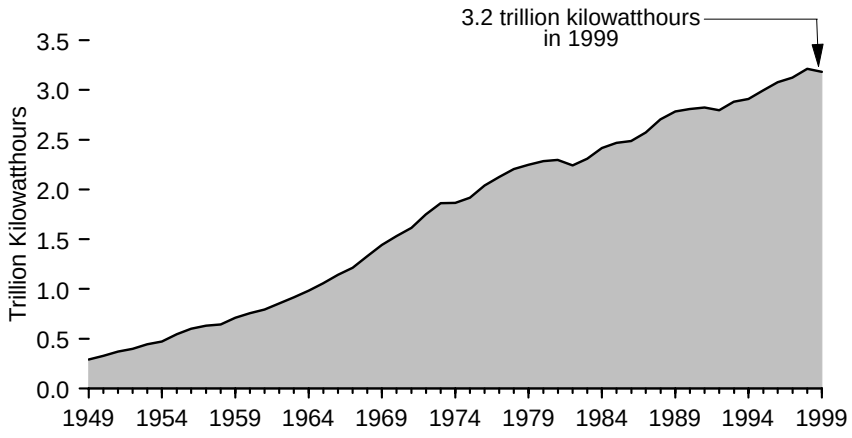
(Billion Kilowatthours)

Year	Fossil Fuels				Other Gas [4]	Nuclear Electric Power	Hydroelectric Pumped Storage [5]	Renewable Energy								Total [11]
											Waste					
	Coal [1]	Petroleum [2]	Natural Gas [3]	Total Fossil Fuels				Conventional Hydroelectric Power	Geo-thermal	Wood [6]	MSW [7] and LFG [8]	Other Waste [9]	Wind	Solar [10]	Total Renewable Energy	
1989	1,583.8	163.9	R363.9	R2,111.6	NA	529.4	(12)	R273.7	R14.9	27.7	R7.9	R2.0	R2.3	R0.6	R329.1	R2,971.9
1990	1,590.3	124.0	R378.3	R2,092.7	NA	577.0	-3.5	R293.0	R15.8	30.4	R10.8	R2.3	R3.0	0.6	R356.1	R3,024.9
1991	1,589.9	119.0	R392.6	R2,101.5	NA	612.6	-4.5	R289.5	R16.0	33.2	R12.4	R3.3	R3.0	0.8	R358.2	R3,071.3
1992	1,621.1	99.4	418.3	2,138.8	NA	618.8	-4.2	253.1	16.4	35.6	14.0	3.8	2.9	0.7	326.5	3,083.4
1993	1,690.0	112.4	428.4	2,230.8	NA	610.4	-4.0	280.5	17.0	36.8	14.5	4.1	3.0	0.9	356.7	3,196.9
1994	1,691.7	105.5	465.9	R2,263.1	12.1	640.5	-3.4	260.2	16.8	37.8	15.5	3.6	3.4	0.8	338.1	3,253.8
1995	1,710.2	75.3	498.5	R2,284.0	R13.5	673.4	-2.7	311.0	14.4	36.4	16.9	R3.4	3.2	0.8	R386.0	3,357.8
1996	1,795.7	81.7	455.8	R2,333.2	R14.2	674.7	-3.1	347.4	15.1	36.8	16.4	R4.3	3.4	0.9	R424.3	3,447.0
1997	R1,844.1	R93.0	R485.4	R2,422.6	R11.2	628.6	-4.0	358.9	R14.6	R34.2	R17.6	R3.0	R3.2	0.9	R432.4	R3,494.2
1998	R1,873.9	R126.9	R540.6	R2,541.5	R8.5	673.7	-4.4	R323.3	R14.7	R31.8	R18.1	R3.2	R3.0	0.9	R395.0	R3,617.9
1999P	1,890.7	115.6	E545.8	2,552.1	E9.1	727.9	-6.1	311.7	14.2	41.8	E19.6	E3.4	3.6	0.3	394.7	3,677.7

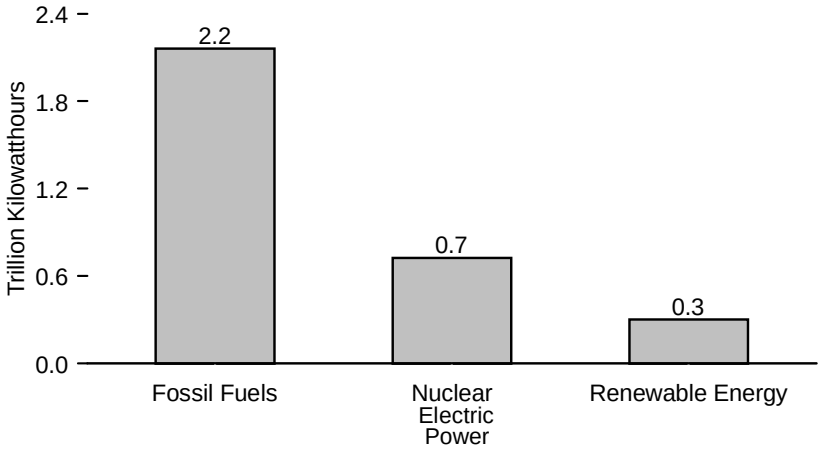
[1] Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.
[2] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, petroleum coke, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.
[3] Includes supplemental gaseous fuels, waste heat, and waste gas.
[4] Butane, propane, blast furnace gas, coke oven gas, refinery gas, and process gas.
[5] Pumped storage facility production minus energy used for pumping.
[6] Wood, wood waste, black liquor, red liquor, spent sulfite liquor, pitch, wood sludge, peat, railroad ties, and utility poles.
[7] Municipal solid waste.
[8] Landfill gas.
[9] Methane, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solid byproducts, tires, agricultural byproducts, closed looped biomass, fish oil, and straw.
[10] Solar thermal and photovoltaic energy.
[11] Data prior to 1999 include hydrogen, sulfur, batteries, chemicals, and purchased steam, which are not separately displayed on this table. Data for 1999 exclude these components.
[12] Included in conventional hydroelectric power.
R=Revised. P=Preliminary. E=Estimated. NA=Not available.
Notes: • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.
Web Page: http://www.eia.doe.gov/fuelelectric.html.
Sources: Tables 8.3 and 8.4.

Figure 8.3 Electricity Net Generation at Electric Utilities

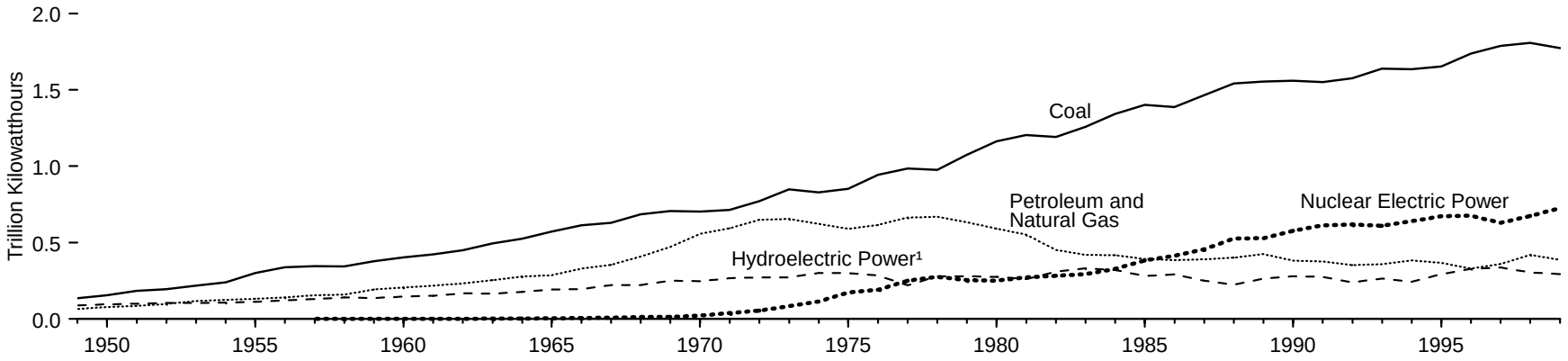
Total, 1949-1999



By Source, 1999



By Source, 1949-1999



¹ Conventional and pumped-storage hydroelectric power.

Source: Table 8.3.

Note: Because vertical scales differ, graphs should not be compared.

Table 8.3 Electricity Net Generation at Electric Utilities, 1949-1999

(Billion Kilowatthours)

	Fossil Fuels						Renewable Energy								
										Waste					
Year	Coal	Petroleum [1]	Natural Gas [2]	Total Fossil Fuels	Nuclear Electric Power	Hydroelectric Pumped Storage [3]	Conventional Hydroelectric Power	Geo-thermal	Wood [4]	MSW [5] and LFG [6]	Other Waste [7]	Wind	Solar [8]	Total Renewable Energy	Total
1949	135.5	28.5	37.0	201.0	0	(9)	89.7	0	0.4	NA	NA	0	0	90.1	291.1
1950	154.5	33.7	44.6	232.8	0	(9)	95.9	0	0.4	NA	NA	0	0	96.3	329.1
1951	185.2	28.7	56.6	270.5	0	(9)	99.8	0	0.4	NA	NA	0	0	100.1	370.7
1952	195.4	29.7	68.5	293.6	0	(9)	105.1	0	0.5	NA	NA	0	0	105.6	399.2
1953	218.8	38.4	79.8	337.0	0	(9)	105.2	0	0.4	NA	NA	0	0	105.6	442.7
1954	239.1	31.5	93.7	364.4	0	(9)	107.1	0	0.3	NA	NA	0	0	107.3	471.7
1955	301.4	37.1	95.3	433.8	0	(9)	113.0	0	0.3	NA	NA	0	0	113.3	547.0
1956	338.5	35.9	104.0	478.5	0	(9)	122.0	0	0.2	NA	NA	0	0	122.2	600.7
1957	346.4	40.5	114.2	501.1	(s)	(9)	130.2	0	0.2	NA	NA	0	0	130.4	631.5
1958	344.4	40.4	119.8	504.5	0.2	(9)	140.3	0	0.2	NA	NA	0	0	140.4	645.1
1959	378.4	46.8	146.6	571.9	0.2	(9)	137.8	0	0.2	NA	NA	0	0	137.9	710.0
1960	403.1	48.0	158.0	609.0	0.5	(9)	145.8	(s)	0.1	NA	NA	NA	0	146.0	755.5
1961	421.9	48.5	169.3	639.7	1.7	(9)	152.2	0.1	0.1	NA	NA	NA	0	152.4	793.8
1962	450.2	48.9	184.3	683.4	2.3	(9)	168.6	0.1	0.1	NA	NA	NA	0	168.8	854.5
1963	493.9	52.0	201.6	747.5	3.2	(9)	165.8	0.2	0.1	NA	NA	NA	0	166.1	916.8
1964	526.2	57.0	220.0	803.2	3.3	(9)	177.1	0.2	0.1	NA	NA	NA	0	177.4	984.0
1965	570.9	64.8	221.6	857.3	3.7	(9)	193.9	0.2	0.3	NA	NA	NA	0	194.3	1,055.3
1966	613.5	78.9	251.2	943.6	5.5	(9)	194.8	0.2	0.3	NA	NA	NA	0	195.3	1,144.4
1967	630.5	89.3	264.8	984.6	7.7	(9)	221.5	0.3	0.3	NA	NA	NA	0	222.2	1,214.4
1968	684.9	104.3	304.4	1,093.6	12.5	(9)	222.5	0.4	0.4	NA	NA	NA	0	223.3	1,329.4
1969	706.0	137.8	333.3	1,177.1	13.9	(9)	250.2	0.6	0.3	NA	NA	NA	0	251.1	1,442.2
1970	704.4	184.2	372.9	1,261.5	21.8	(9)	247.7	0.5	0.1	0.2	(10)	NA	0	248.6	1,531.9
1971	713.1	220.2	374.0	1,307.4	38.1	(9)	266.3	0.5	0.1	0.2	(10)	NA	0	267.2	1,612.6
1972	771.1	274.3	375.7	1,421.2	54.1	(9)	272.6	1.5	0.1	0.2	(10)	NA	0	274.4	1,749.7
1973	847.7	314.3	340.9	1,502.9	83.5	(9)	272.1	2.0	0.1	0.2	(10)	NA	0	274.4	1,860.7
1974	828.4	300.9	320.1	1,449.4	114.0	(9)	301.0	2.5	0.1	0.2	(10)	NA	0	303.7	1,867.1
1975	852.8	289.1	299.8	1,441.7	172.5	(9)	300.0	3.2	(s)	0.2	(10)	NA	0	303.5	1,917.6
1976	944.4	320.0	294.6	1,559.0	191.1	(9)	283.7	3.6	0.1	0.2	(10)	NA	0	287.6	2,037.7
1977	985.2	358.2	305.5	1,648.9	250.9	(9)	220.5	3.6	0.3	0.2	(10)	NA	0	224.5	2,124.3
1978	975.7	365.1	305.4	1,646.2	276.4	(9)	280.4	3.0	0.2	0.1	(10)	NA	0	283.7	2,206.3
1979	1,075.0	303.5	329.5	1,708.0	255.2	(9)	279.8	3.9	0.3	0.2	(10)	NA	0	284.2	2,247.4
1980	1,161.6	246.0	346.2	1,753.8	251.1	(9)	276.0	5.1	0.3	0.2	(10)	NA	0	281.5	2,286.4
1981	1,203.2	206.4	345.8	1,755.4	272.7	(9)	260.7	5.7	0.2	0.1	(10)	NA	0	266.7	2,294.8
1982	1,192.0	146.8	305.3	1,644.1	282.8	(9)	309.2	4.8	0.2	0.1	(10)	NA	0	314.4	2,241.2
1983	1,259.4	144.5	274.1	1,678.0	293.7	(9)	332.1	6.1	0.2	0.2	(10)	(s)	0	338.6	2,310.3
1984	1,341.7	119.8	297.4	1,758.9	327.6	(9)	321.2	7.7	0.5	0.4	(10)	(s)	0	329.8	2,416.3
1985	1,402.1	100.2	291.9	1,794.3	383.7	(9)	281.1	9.3	0.7	0.6	(10)	(s)	0	291.9	2,469.8
1986	1,385.8	136.6	248.5	1,770.9	414.0	(9)	290.8	10.3	0.5	0.7	(10)	(s)	0	302.3	2,487.3
1987	1,463.8	118.5	272.6	1,854.9	455.3	(9)	249.7	10.8	0.8	0.7	(10)	(s)	0	262.0	2,572.1
1988	1,540.7	148.9	252.8	1,942.4	527.0	(9)	222.9	10.3	0.9	0.7	(10)	(s)	0	234.9	2,704.3
1989	1,553.7	158.3	266.6	1,978.6	529.4	(9)	265.1	9.3	1.0	0.5	0.5	(s)	(s)	276.4	2,784.3
1990	1,559.6	117.0	264.1	1,940.7	576.9	-3.5	283.4	8.6	0.8	0.7	0.6	(s)	(s)	294.1	2,808.2
1991	1,551.2	111.5	264.2	1,926.8	612.6	-4.5	280.1	8.1	0.7	0.7	0.6	(s)	(s)	290.2	2,825.0
1992	1,575.9	88.9	263.9	1,928.7	618.8	-4.2	243.7	8.1	0.8	0.7	0.6	(s)	(s)	253.9	2,797.2
1993	1,639.2	99.5	258.9	1,997.6	610.3	-4.0	269.1	7.6	0.9	0.7	0.4	(s)	(s)	278.7	2,882.5
1994	1,635.5	91.0	291.1	2,017.6	640.4	-3.4	247.1	6.9	0.8	0.9	0.4	(s)	(s)	256.0	2,910.7
1995	1,652.9	60.8	307.3	2,021.1	673.4	-2.7	296.4	4.7	0.6	0.9	0.2	(s)	(s)	302.8	2,994.5
1996	1,737.5	67.3	262.7	R2,067.5	674.7	-3.1	331.1	5.2	0.8	0.9	R0.3	(s)	(s)	R338.3	3,077.4
1997	1,787.8	77.8	283.6	R2,149.2	628.6	-4.0	341.3	5.5	0.7	1.0	R0.3	(s)	(s)	R348.7	3,122.5
1998	1,807.5	110.2	309.2	R2,226.9	673.7	-4.4	308.8	5.2	0.7	1.0	R0.3	(s)	(s)	R316.0	3,212.2
1999P	1,773.5	89.7	297.3	2,160.5	725.0	-6.0	299.7	1.7	0.7	E0.9	E0.3	(s)	(s)	303.4	3,182.9

[1] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, kerosene, and petroleum coke.
[2] Includes supplemental gaseous fuels.
[3] Pumped storage facility production minus energy used for pumping.
[4] Wood, wood waste, wood liquors, pitch, wood sludge, peat, railroad ties, and utility poles.
[5] Municipal solid waste.
[6] Landfill gas.
[7] Methane, digester gas, waste alcohol, sludge waste, solid byproducts, and tires.
[8] Solar thermal and photovoltaic energy.
[9] Included in conventional hydroelectric power.
[10] Included in MSW and LFG.

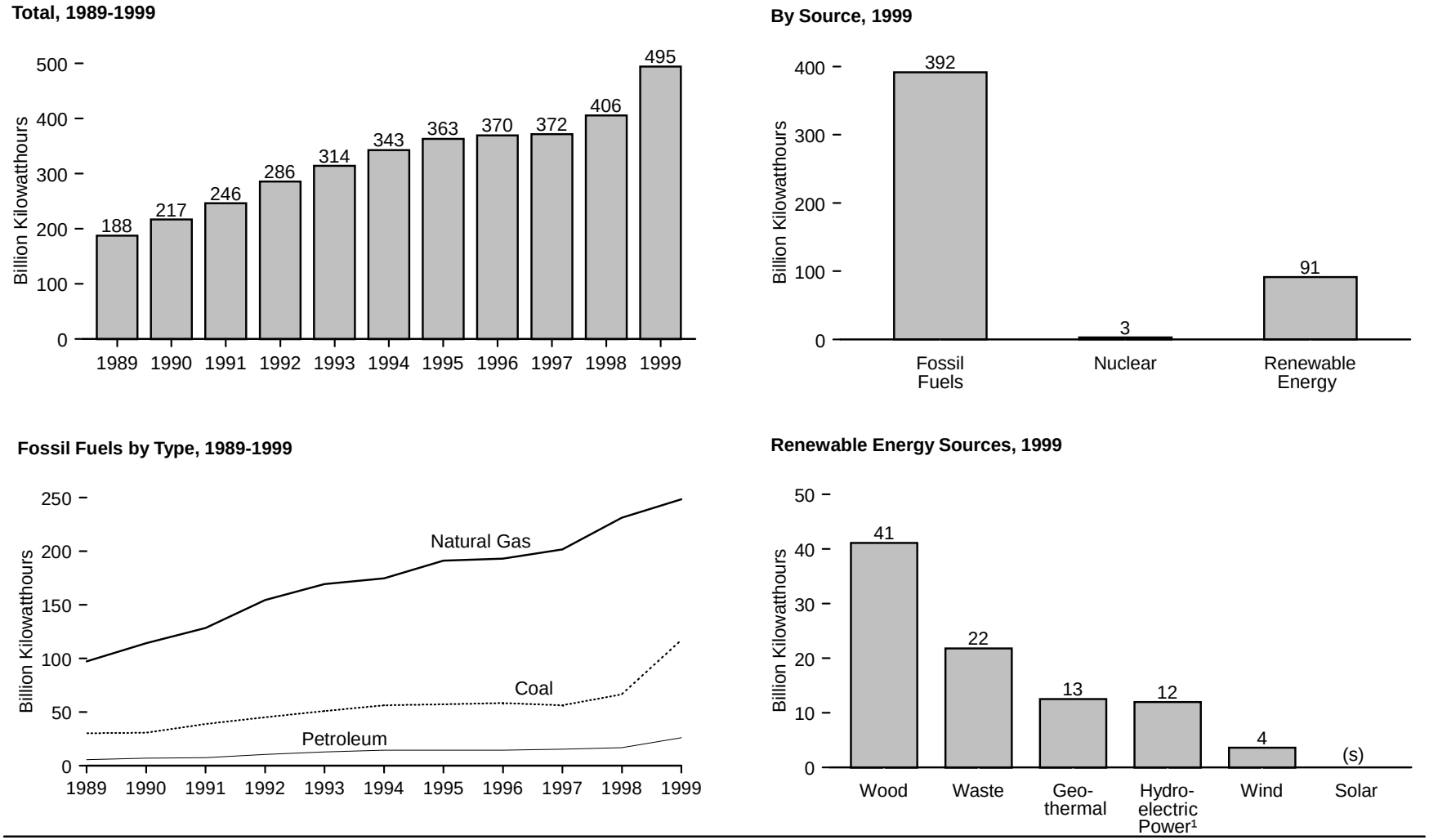
R=Revised. P=Preliminary. E=Estimated. NA=Not available. (s)=Less than 0.05 billion kilowatthours.

Notes: • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: • 1949-September 1977—Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977-1981—Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982-1989—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report." • 1990 forward—EIA, *Electric Power Monthly* (March 2000), Tables 4 and 5.

Figure 8.4 Electricity Net Generation at Nonutility Power Producers



[1] Conventional hydroelectric power only.
(s)=less than 0.5 billion kilowatthours.

Note: Because vertical scales differ, graphs should not be compared.
Source: Table 8.4.

Table 8.4 Electricity Net Generation at Nonutility Power Producers, 1989-1999

(Billion Kilowatthours)

Year	Fossil Fuels				Other Gas [4]	Nuclear Electric Power	Hydroelectric Pumped Storage [5]	Renewable Energy								Total [11]
	Coal [1]	Petroleum [2]	Natural Gas [3]	Total Fossil Fuels				Conventional Hydroelectric Power	Geo-thermal	Wood [6]	Waste		Wind	Solar [10]	Total Renewable Energy	
											MSW [7] and LFG [8]	Other Waste [9]				
1989[12]	30.2	5.5	R97.3	R133.0	(13)	(s)	0.0	R8.6	R5.5	26.8	R7.5	R1.5	R2.3	R0.6	R52.8	R187.6
1990[12]	30.7	7.0	R114.3	R152.0	(13)	0.1	0.0	R9.6	R7.2	29.6	R10.1	R1.8	R3.0	0.6	R62.0	R216.7
1991[12]	38.8	7.5	R128.4	R174.7	(13)	0.1	0.0	R9.4	R8.0	32.4	R11.7	R2.8	R3.0	0.8	R68.0	R246.3
1992	45.2	10.5	154.4	210.1	(13)	0.1	0.0	9.4	8.3	34.8	13.3	3.2	2.9	0.7	72.5	286.1
1993	50.9	12.8	169.5	233.2	(13)	0.1	0.0	11.4	9.5	35.9	13.8	3.7	3.0	0.9	78.1	314.4
1994	56.2	14.5	174.8	R245.5	12.1	0.1	0.0	13.1	9.8	37.0	14.6	3.2	3.4	0.8	82.1	343.1
1995	57.3	14.4	191.2	R262.9	R13.5	0.0	0.0	14.6	9.6	35.8	16.0	3.2	3.2	0.8	83.2	363.3
1996	58.3	14.3	193.1	R265.7	R14.2	0.0	0.0	16.4	9.9	36.0	15.5	R4.0	3.4	0.9	R86.0	369.6
1997	R56.3	R15.3	R201.8	R273.4	R11.2	0.0	0.0	17.7	R9.1	R33.5	R16.6	R2.7	R3.2	0.9	R83.7	R371.7
1998	R66.5	R16.8	R231.4	R314.7	R8.5	0.0	0.0	R14.5	R9.5	R31.1	R17.1	R2.9	R3.0	0.9	R78.9	R405.7
1999[P]	117.2	25.9	E248.4	391.5	E9.1	2.9	-0.1	12.0	12.5	41.1	E18.7	E3.1	3.6	0.3	91.4	494.8

[1] Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.

[2] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, petroleum coke, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.

[3] Includes waste heat and waste gas.

[4] Butane, propane, blast furnace gas, coke oven gas, refinery gas, and process gas.

[5] Pumped storage facility production minus energy used for pumping.

[6] Wood, wood waste, black liquor, red liquor, spent sulfite liquor, pitch, wood sludge, peat, railroad ties, and utility poles.

[7] Municipal solid waste.

[8] Landfill gas.

[9] Methane, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solid byproducts, tires, agricultural byproducts, closed loop biomass, fish oil, and straw.

[10] Solar thermal and photovoltaic energy.

[11] Data prior to 1999 include hydrogen, sulfur, batteries, chemicals, and purchased steam, which are not separately displayed on this table. Data for 1999 exclude these components.

[12] Data for 1989-1991 were collected for facilities with capacities of 5 megawatts or more. In 1992, the threshold was lowered to include facilities with capacities of 1 megawatt or more. Estimates of the 1-to-5 megawatt range for 1989-1991 were derived from historical data. The estimation did not include retirements that occurred prior to 1992 and included only the capacity of facilities that came on line before 1992.

[13] Included in natural gas.

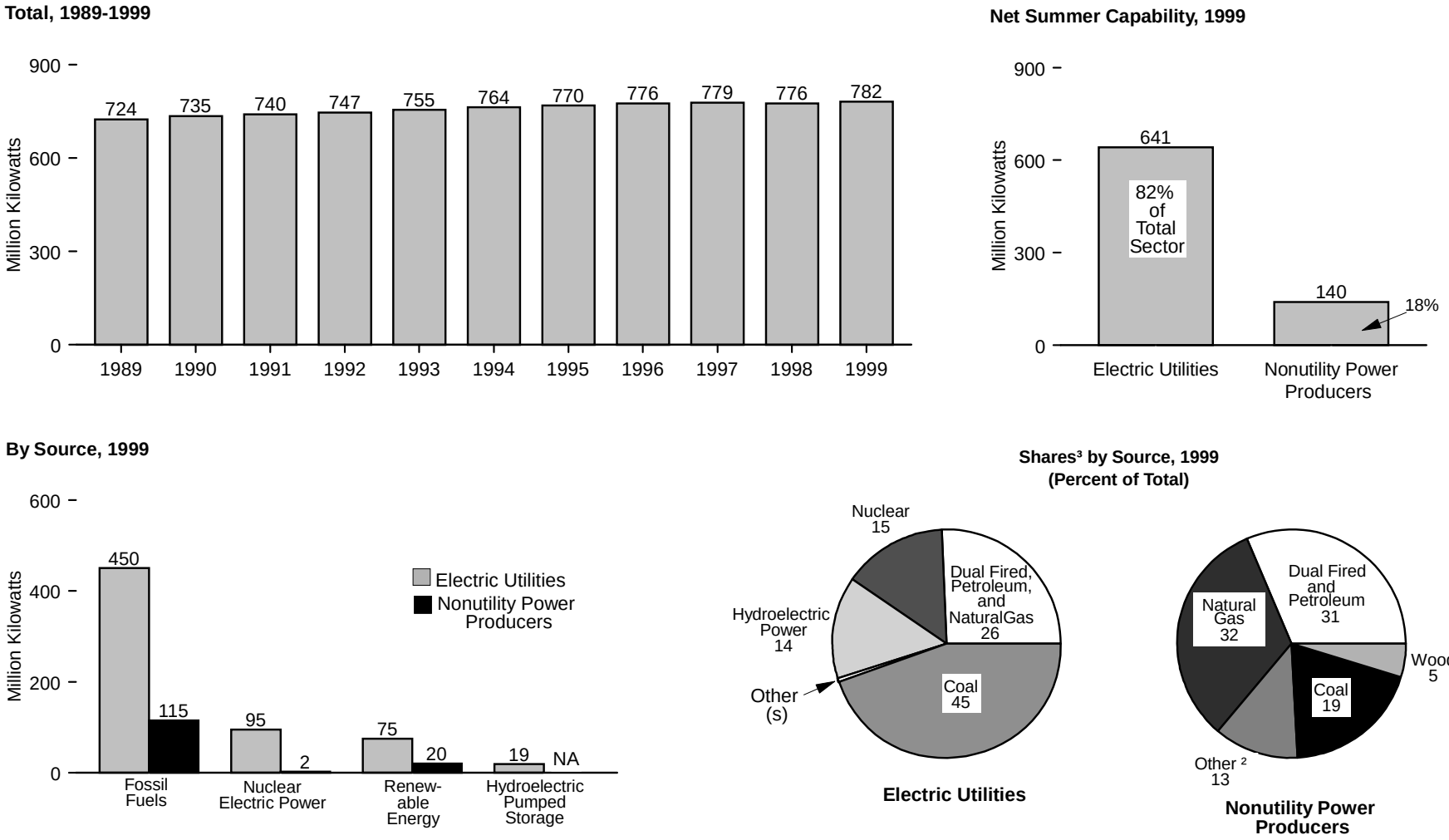
R=Revised. P=Preliminary. E=Estimated. (s)=Less than 0.05 billion kilowatthours.

Notes: • Due to restructuring of the electric power sector, the sale of generation assets is resulting in reclassification of plants from electric utility to nonutility plants. • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: • 1989-1998—Energy Information Administration (EIA), estimated from Form EIA-860B, "Annual Electric Generator Report-Nonutility" and predecessor form. • 1999—EIA, *Electric Power Monthly* (March 2000), Tables 58-60.

Figure 8.5 Electric Power Sector Net Summer Capability



¹ Geothermal, wood, waste, wind, and solar.

² Other gas, conventional hydroelectric power, geothermal, waste, wind, solar, hydrogen, sulfur, batteries, chemicals, and purchased steam.

³ Shares are based on data prior to rounding for publication and may not sum exactly to 100 percent.

NA= Not available.

(s)=Less than 0.5 percent.

Notes: • Data are at end of year. • Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.5, 8.6, and 8.7.

Table 8.5 Electric Power Sector Net Summer Capability, 1989-1999

(Million Kilowatts)

Year	Fossil Fuels					Other Gas [5]	Nuclear Electric Power	Hydroelectric Pumped Storage	Renewable Energy							Total [9]
	Coal [1]	Petroleum [2]	Natural Gas [3]	Dual Fired [4]	Total Fossil Fuels				Conventional Hydroelectric Power	Geo-thermal	Wood [6]	Waste [7]	Wind	Solar [8]	Total Renewable Energy	
1989	R303.0	R56.9	R29.7	R131.2	R520.8	NA	98.2	18.1	R74.6	R2.6	R5.8	R2.1	R1.7	R0.3	R87.0	R724.3
1990	R306.7	R56.7	R31.0	R133.5	R527.9	NA	99.6	19.5	R74.0	R2.7	R6.2	R2.6	R1.9	0.3	R87.7	R734.9
1991	R306.7	R54.1	R35.1	R135.3	R531.3	NA	99.6	18.4	R76.2	2.6	R6.7	R3.0	R2.0	0.3	R90.7	R740.5
1992	308.5	51.5	35.1	141.2	536.3	NA	99.0	21.2	74.8	2.9	6.7	3.0	1.8	0.3	89.5	746.6
1993	309.9	49.7	37.4	144.7	541.6	NA	99.1	21.1	77.4	3.0	6.9	3.2	1.8	0.3	92.6	755.0
1994	310.8	47.6	43.1	147.0	R548.5	1.1	99.1	21.2	78.0	3.0	7.3	3.2	1.7	0.3	93.6	764.0
1995	310.8	48.0	41.9	152.4	R553.1	1.1	99.5	21.4	78.6	3.0	6.8	3.5	1.7	0.3	93.9	769.5
1996	313.0	47.8	48.8	151.6	R561.2	0.3	100.8	21.1	76.4	2.9	7.1	3.5	1.7	0.3	91.9	775.9
1997	R313.1	R46.3	R49.9	R153.6	R563.0	(s)	99.7	19.3	79.8	2.9	R7.1	R3.4	1.6	0.3	R95.1	778.5
1998	R312.6	R42.2	R59.1	R148.0	R561.9	R0.2	97.1	R18.9	R79.6	2.9	R6.8	R3.5	1.7	R0.4	R94.8	R775.9
1999E	312.5	42.3	57.1	153.1	565.1	0.2	97.2	18.9	79.7	2.9	6.8	3.5	1.7	0.4	95.0	781.6

[1] Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.

[2] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, petroleum coke, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.

[3] Includes supplemental gaseous fuels, waste heat, and waste gas.

[4] Petroleum and natural gas.

[5] Butane, propane, blast furnace gas, coke oven gas, refinery gas, and process gas.

[6] Wood, wood waste, black liquor, red liquor, spent sulfite liquor, pitch, wood sludge, peat, railroad ties, and utility poles.

[7] Municipal solid waste, landfill gas, methane, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solid byproducts, tires, agricultural byproducts, closed loop biomass, fish oil, and straw.

[8] Solar thermal and photovoltaic energy.

[9] Includes hydrogen, sulfur, batteries, chemicals, purchased steam, hot nitrogen, and multi-fueled capacity, which are not separately displayed on this table.

R=Revised. E=Estimated. NA=Not available. (s)=Less than 0.05 million kilowatts.

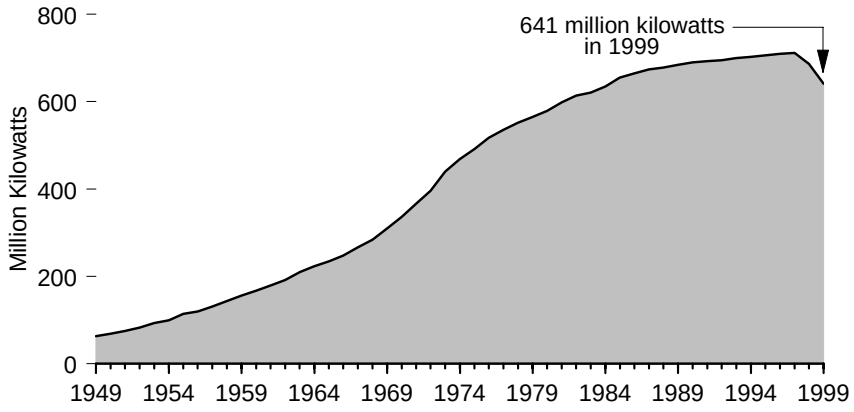
Notes: • Data are at end of year. • See Note 3 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

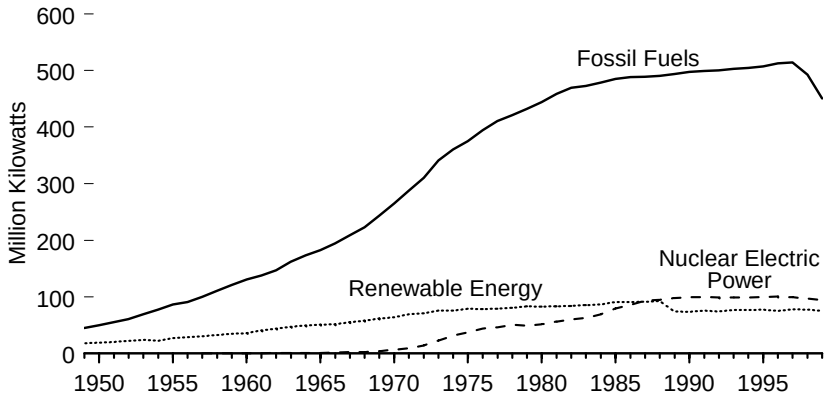
Sources: Tables 8.6 and 8.7.

Figure 8.6 Electric Utility Net Summer Capability

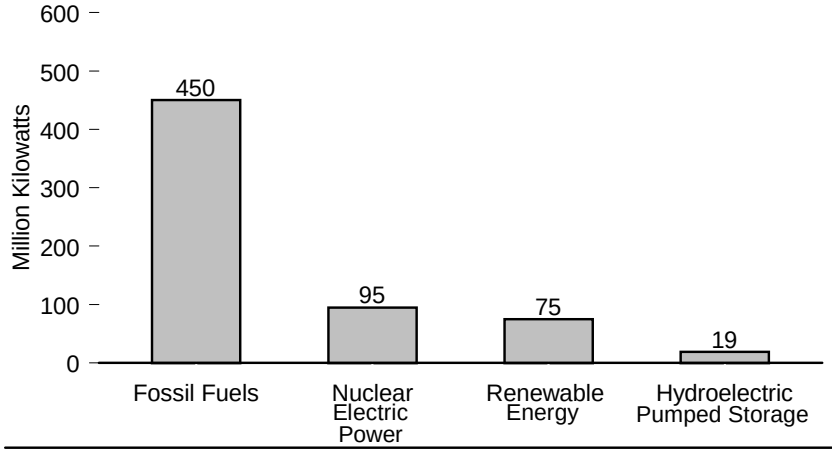
Total, 1949-1999



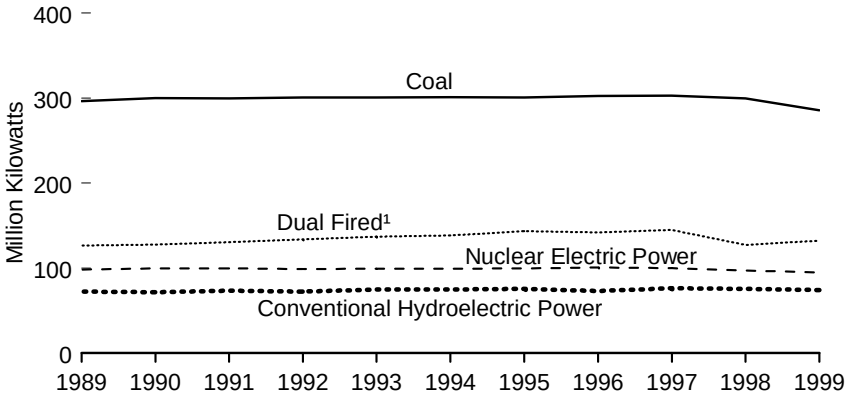
By Source, 1949-1999



By Source, 1999



By Selected Source, 1989-1999



¹ Petroleum and natural gas.

Notes: • Data are at end of year. • Because vertical scales differ, graphs should not be compared.

Source: Table 8.6.

Table 8.6 Electric Utility Net Summer Capability, 1949-1999

(Million Kilowatts)

Year	Fossil Fuels					Nuclear Electric Power	Hydroelectric Pumped Storage	Renewable Energy							Total [7]
	Coal	Petroleum [1]	Natural Gas [2]	Dual Fired [3]	Total Fossil Fuels			Conventional Hydroelectric Power	Geo-thermal	Wood [4]	Waste [5]	Wind	Solar [6]	Total Renewable Energy	
1949	NA	NA	NA	NA	44.9	0	([8])	18.5	0	(s)	([9])	0	0	18.5	63.4
1950	NA	NA	NA	NA	50.0	0	([8])	19.2	0	(s)	([9])	0	0	19.2	69.2
1951	NA	NA	NA	NA	55.0	0	([8])	20.5	0	(s)	([9])	0	0	20.5	75.5
1952	NA	NA	NA	NA	60.8	0	([8])	22.4	0	(s)	([9])	0	0	22.4	83.2
1953	NA	NA	NA	NA	69.5	0	([8])	23.8	0	(s)	([9])	0	0	23.8	93.3
1954	NA	NA	NA	NA	77.5	0	([8])	22.5	0	(s)	([9])	0	0	22.5	100.0
1955	NA	NA	NA	NA	86.8	0	([8])	27.4	0	(s)	([9])	0	0	27.4	114.2
1956	NA	NA	NA	NA	91.2	0	([8])	28.5	0	(s)	([9])	0	0	28.5	119.7
1957	NA	NA	NA	NA	100.3	0.1	([8])	30.7	0	0.1	([9])	0	0	30.8	131.1
1958	NA	NA	NA	NA	110.7	0.1	([8])	32.5	0	0.1	([9])	0	0	32.6	143.3
1959	NA	NA	NA	NA	121.0	0.1	([8])	34.8	0	0.1	([9])	0	0	34.9	155.9
1960	NA	NA	NA	NA	130.8	0.4	([8])	35.8	(s)	0.1	([9])	NA	0	35.9	167.1
1961	NA	NA	NA	NA	137.8	0.4	([8])	40.7	(s)	0.1	([9])	NA	0	40.8	179.0
1962	NA	NA	NA	NA	147.3	0.7	([8])	44.0	(s)	0.1	([9])	NA	0	44.1	192.1
1963	NA	NA	NA	NA	161.8	0.8	([8])	47.0	(s)	0.1	([9])	NA	0	47.1	209.7
1964	NA	NA	NA	NA	173.4	0.8	([8])	49.4	(s)	0.1	([9])	NA	0	49.5	223.7
1965	NA	NA	NA	NA	182.9	0.8	([8])	51.0	(s)	0.1	([9])	NA	0	51.1	234.8
1966	NA	NA	NA	NA	194.5	1.7	([8])	51.2	(s)	0.1	([9])	NA	0	51.3	247.5
1967	NA	NA	NA	NA	208.9	2.7	([8])	55.0	0.1	0.1	([9])	NA	0	55.1	266.7
1968	NA	NA	NA	NA	223.2	2.7	([8])	57.9	0.1	0.1	([9])	NA	0	58.0	284.0
1969	NA	NA	NA	NA	243.6	4.4	([8])	61.6	0.1	0.1	([9])	NA	0	61.7	309.8
1970	NA	NA	NA	NA	265.4	7.0	([8])	63.8	0.1	0.1	([9])	NA	0	63.9	336.4
1971	NA	NA	NA	NA	288.0	9.0	([8])	69.1	0.2	0.1	([9])	NA	0	69.4	366.4
1972	NA	NA	NA	NA	310.7	14.5	([8])	70.5	0.3	0.1	([9])	NA	0	70.9	396.0
1973	NA	NA	NA	NA	341.2	22.7	([8])	75.4	0.4	0.1	([9])	NA	0	75.9	439.8
1974	NA	NA	NA	NA	360.7	31.9	([8])	75.5	0.4	0.1	([9])	NA	0	76.0	468.5
1975	NA	NA	NA	NA	375.1	37.3	([8])	78.4	0.5	0.1	([9])	NA	0	79.0	491.3
1976	NA	NA	NA	NA	394.8	43.8	([8])	78.0	0.5	0.1	([9])	NA	0	78.6	517.2
1977	NA	NA	NA	NA	410.4	46.3	([8])	78.6	0.5	0.1	([9])	NA	0	79.2	535.9
1978	NA	NA	NA	NA	420.8	50.8	([8])	79.9	0.5	0.1	([9])	NA	0	80.5	552.1
1979	NA	NA	NA	NA	432.1	49.7	([8])	82.9	0.7	0.1	([9])	NA	0	83.6	565.5
1980	NA	NA	NA	NA	444.1	51.8	([8])	81.7	0.9	0.1	([9])	NA	0	82.7	578.6
1981	NA	NA	NA	NA	458.9	56.0	([8])	82.4	0.9	0.1	([9])	(s)	0	83.4	598.3
1982	NA	NA	NA	NA	469.6	60.0	([8])	83.0	1.0	0.1	([9])	(s)	0	84.1	613.7
1983	NA	NA	NA	NA	472.8	63.0	([8])	83.9	1.2	0.2	([9])	(s)	0	85.3	621.1
1984	NA	NA	NA	NA	478.6	69.7	([8])	85.3	1.2	0.3	([9])	(s)	0	86.9	635.1
1985	NA	NA	NA	NA	485.0	79.4	([8])	88.9	1.6	0.2	0.2	(s)	0	90.8	655.2
1986	NA	NA	NA	NA	488.3	85.2	([8])	89.3	1.6	0.2	0.2	(s)	0	91.2	664.8
1987	NA	NA	NA	NA	488.8	93.6	([8])	89.7	1.5	0.2	0.2	(s)	0	91.7	674.1
1988	NA	NA	NA	NA	490.6	94.7	([8])	90.3	1.7	0.2	0.2	(s)	0	92.4	677.7
1989	296.6	55.6	15.4	126.3	493.9	98.2	18.1	72.4	1.6	0.2	0.2	(s)	(s)	74.4	684.6
1990	299.9	55.4	15.0	127.5	497.9	99.6	19.5	71.4	1.6	0.2	0.2	(s)	(s)	73.5	690.5
1991	299.6	52.6	16.7	130.5	499.4	99.6	R20.6	R71.5	1.6	0.2	0.2	(s)	(s)	75.6	693.0
1992	300.5	49.9	16.4	133.7	500.5	99.0	21.2	72.2	1.7	0.2	0.2	(s)	(s)	74.4	695.1
1993	300.8	47.8	17.0	137.2	502.8	99.0	21.1	74.8	1.7	0.2	0.2	(s)	(s)	77.0	700.0
1994	301.1	45.5	19.8	138.4	504.8	99.1	21.2	74.8	1.7	0.3	0.3	(s)	(s)	77.1	702.2
1995	300.6	46.1	17.7	143.2	507.6	99.5	21.4	75.3	1.7	0.3	0.3	(s)	(s)	77.6	706.1
1996	302.4	45.7	22.7	142.0	512.8	100.8	21.1	73.1	1.6	0.2	0.2	(s)	(s)	75.2	709.9
1997	302.9	43.7	22.9	144.9	514.3	99.7	19.3	76.2	1.6	0.2	0.2	(s)	(s)	78.3	711.9
1998	R299.7	R39.8	R26.2	R127.2	R492.9	97.1	R18.9	R75.5	R1.5	R0.3	0.2	(s)	(s)	R77.6	R686.7
1999P	285.8	19.9	12.4	132.3	450.3	94.8	18.9	74.1	0.3	0.3	0.2	(s)	(s)	74.9	641.5

[1] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, kerosene, and petroleum coke.
[2] Includes supplemental gaseous fuels.
[3] Petroleum and natural gas.
[4] Wood, wood waste, wood liquors, pitch, wood sludge, peat, railroad ties, and utility poles.
[5] Municipal solid waste, landfill gas, methane, digester gas, waste alcohol, sludge waste, solid byproducts, and tires.
[6] Solar thermal and photovoltaic energy.
[7] For 1997 forward, includes hot nitrogen and multi-fueled capacity, which are not separately displayed on this table.
[8] Included in "Conventional Hydroelectric Power."
[9] Included in "Wood."

R=Revised. P=Preliminary. NA=Not available. (s)=Less than 0.05 million kilowatts.

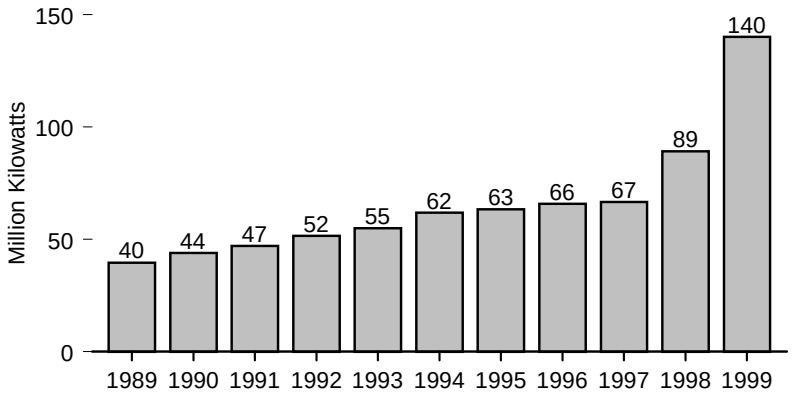
Notes: • Data are at end of year. • See Note 3 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

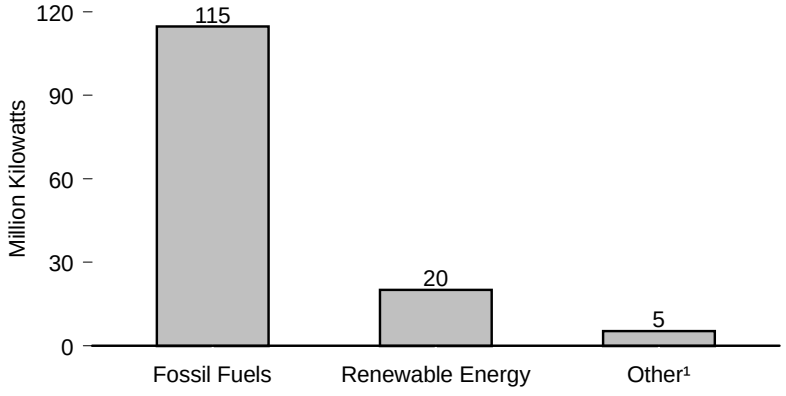
Sources: Energy Information Administration, Form EIA-860A, "Annual Electric Generator Report-Utility" and predecessor forms.

Figure 8.7 Nonutility Power Producer Net Summer Capability

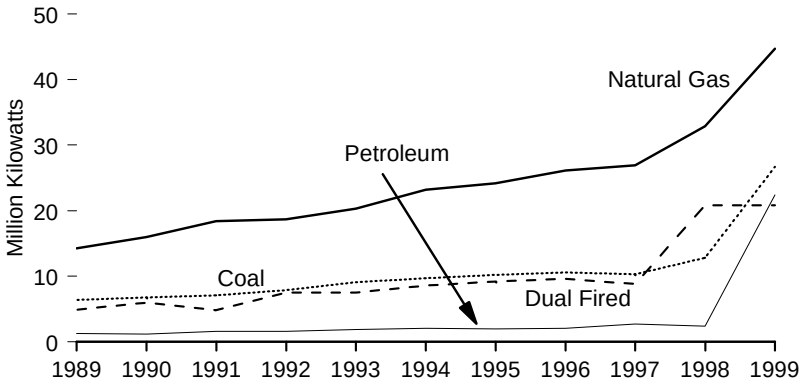
Total, 1989-1999



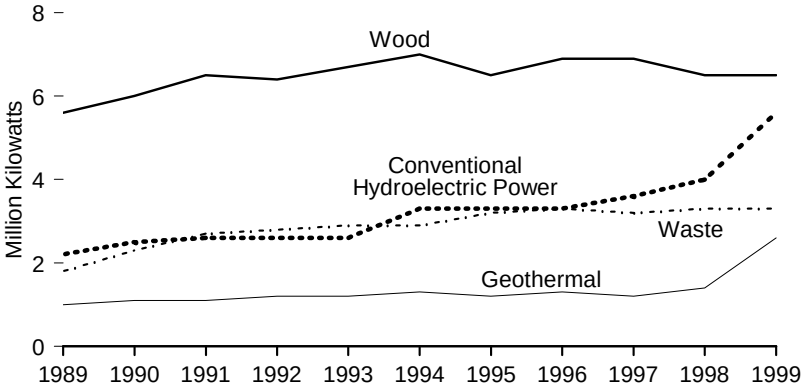
By Source, 1999



Fossil Fuels by Type, 1989-1999



Selected Renewable Energy Sources, 1989-1999



[1] Other gas, nuclear electric power, hydrogen, sulfur, batteries, and chemicals.

Notes: • Data are at end of year. • Due to restructuring of the electric power sector, the sale of generation assets is resulting in reclassificaion of plants from electric utility to nonutility plants.

• Because vertical scales differ, graphs should not be compared.

Source: Table 8.7.

Table 8.7 Nonutility Power Producer Net Summer Capability 1989-1999

(Million Kilowatts)

Year	Fossil Fuels					Other Gas [5]	Nuclear Electric Power	Hydroelectric Pumped Storage	Renewable Energy								Total [11]
												Waste					
	Coal [1]	Petroleum [2]	Natural Gas [3]	Dual Fired [4]	Total Fossil Fuels				Conventional Hydroelectric Power	Geo-thermal	Wood [6]	MSW [7] and LFG [8]	Other Waste [9]	Wind	Solar [10]	Total Renewable Energy	
1989[12]	R6.4	R1.3	R14.3	R4.9	R26.9	NA	(s)	0	R2.2	R1.0	R5.6	R1.6	0.2	R1.7	R0.3	R12.5	R39.6
1990[12]	R6.8	R1.2	R16.0	R6.0	R30.1	NA	(s)	0	R2.5	R1.1	R6.0	R1.9	0.4	R1.9	0.3	R14.2	R44.5
1991[12]	R7.1	R1.6	R18.4	R4.8	R31.9	NA	(s)	0	R2.6	R1.1	R6.5	R2.2	0.5	R2.0	0.3	R15.1	R47.5
1992	7.9	1.6	18.7	7.5	35.8	NA	(s)	0	2.6	1.2	6.4	2.2	0.6	1.8	0.3	15.2	51.5
1993	9.1	1.9	20.3	7.5	38.8	NA	(s)	0	2.6	1.2	6.7	2.2	0.7	1.8	0.3	15.6	55.0
1994	9.7	2.1	23.2	8.6	R43.6	1.1	0	0	3.3	1.3	7.0	2.4	0.5	1.7	0.3	16.5	61.8
1995	10.2	2.0	24.2	9.2	R45.5	1.1	0	0	3.3	1.2	6.5	2.6	0.6	1.7	0.3	16.3	63.4
1996	10.6	2.1	26.1	9.6	R48.4	0.3	0	0	3.3	1.3	6.9	2.5	0.8	1.7	0.3	16.7	65.9
1997	R10.3	2.7	R26.9	R8.8	R48.7	(s)	0	0	3.6	1.2	R6.9	2.6	R0.6	1.6	0.3	R16.8	66.6
1998	R12.8	R2.4	R32.9	R20.8	R69.0	R0.2	0	0	R4.0	R1.4	R6.5	R2.7	R0.6	R1.7	R0.4	R17.2	R89.2
1999[E]	26.7	22.4	44.7	20.8	114.7	0.2	2.4	NA	5.6	2.6	6.5	2.7	0.6	1.7	0.4	20.1	140.1

[1] Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.

[2] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, petroleum coke, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.

[3] Includes waste heat and waste gas.

[4] Petroleum and natural gas.

[5] Butane, propane, blast furnace gas, coke oven gas, refinery gas, and process gas.

[6] Wood, wood waste, black liquor, red liquor, spent sulfite liquor, pitch, wood sludge, peat, railroad ties, and utility poles.

[7] Municipal solid waste.

[8] Landfill gas.

[9] Methane, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solid byproducts, tires, agricultural byproducts, closed loop biomass, fish oil, and straw.

[10] Solar thermal and photovoltaic energy.

[11] Includes hydrogen, sulfur, batteries, chemicals, and purchased steam, which are not separately displayed on this table.

[12] Data for 1989-1991 were collected for facilities with capacities of 5 megawatts or more. In 1992, the threshold was lowered to include facilities with capacities of 1 megawatt or more. Estimates of the 1-to-5 megawatt range for 1989-1991 were derived from historical data. The estimation did not include retirements that occurred prior to 1992 and included only the capacity of facilities that came on line before 1992.

R=Revised. E=Estimated. NA=Not available. (s)=Less than 0.05 million kilowatts.

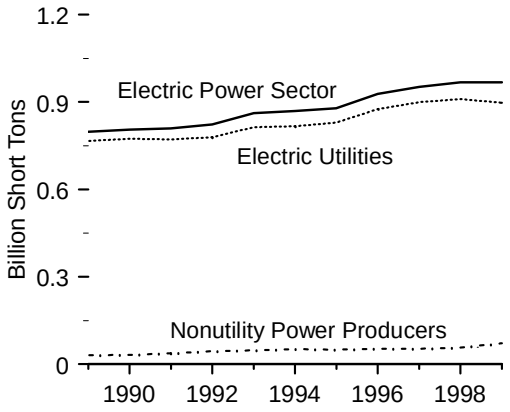
Notes: • Data are at end of year. • Due to restructuring of the electric power sector, the sale of generation assets is resulting in reclassification of plants from electric utility to nonutility plants. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

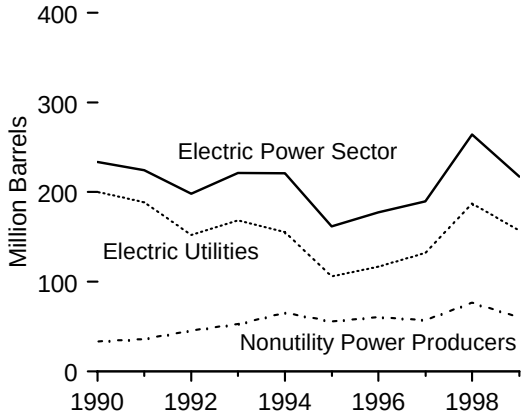
Sources: Energy Information Administration, estimated data using Form EIA-860B, "Annual Electric Generator Report-Nonutility" and predecessor form.

Figure 8.8 Consumption of Fossil Fuels To Generate Electricity

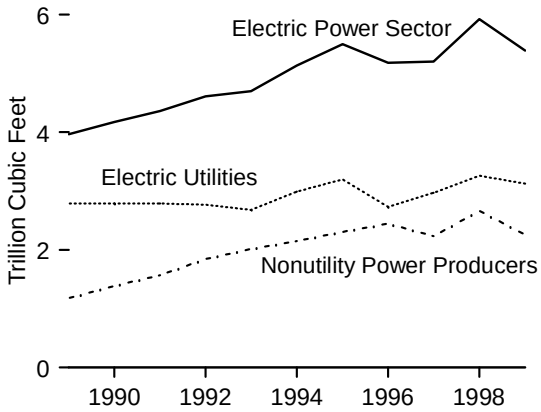
Coal Consumption, 1989-1999



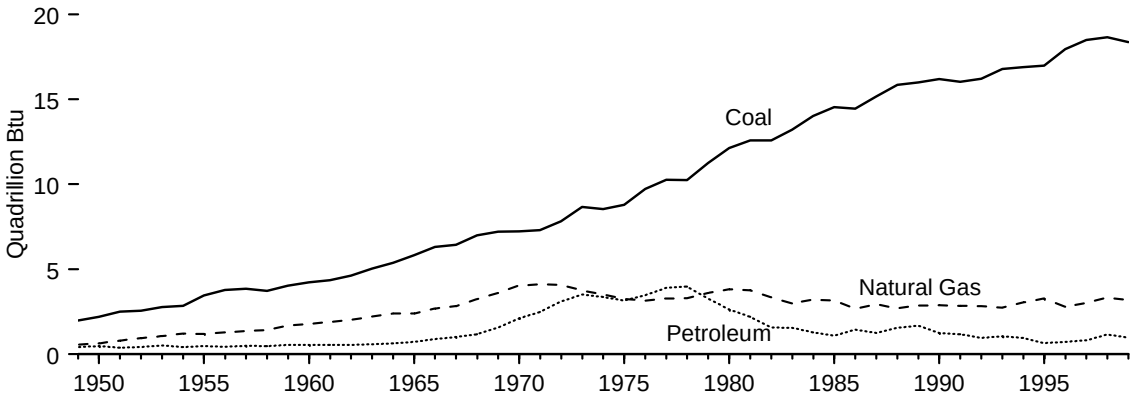
Petroleum Consumption, 1990-1999



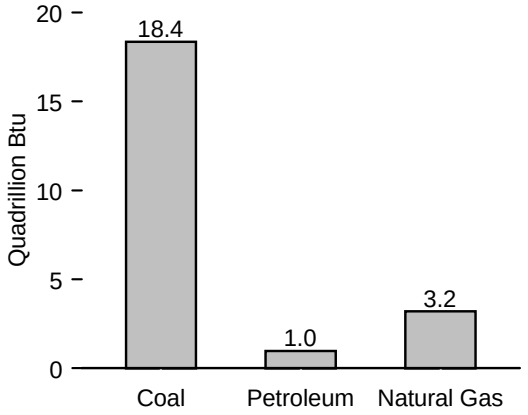
Natural Gas Consumption, 1989-1999



Consumption of Fossil Fuels by Electric Utilities, 1949-1999



Consumption of Fossil Fuels by Electric Utilities, 1999



Note: Because vertical scales differ, graphs should not be compared.

Sources: Tables 8.8, A3, A4, and A5.

Table 8.8 Consumption of Fossil Fuels To Generate Electricity, 1949-1999

Year	Coal [1]			Petroleum									Natural Gas		
				Electric Utilities					Nonutility Power Producers			Total Electric Power Sector			
	Electric Utilities	Nonutility Power Producers	Total Electric Power Sector	Heavy Oil [2]	Light Oil [3]	Liquids	Petroleum Coke	Total [4]	Liquids [5]	Petroleum Coke	Total [4]		Electric Utilities [6]	Nonutility Power Producers [7]	Total Electric Power Sector
	Million Short Tons			Million Barrels			Million Short Tons	Million Barrels	Million Barrels	Million Short Tons	Million Barrels	Million Barrels	Billion Cubic Feet		
1949	84	NA	84	62	5	66	NA	66	NA	NA	NA	66	550	NA	550
1950	92	NA	92	70	5	75	NA	75	NA	NA	NA	75	629	NA	629
1951	106	NA	106	59	5	64	NA	64	NA	NA	NA	64	764	NA	764
1952	107	NA	107	62	5	67	NA	67	NA	NA	NA	67	910	NA	910
1953	116	NA	116	76	6	82	NA	82	NA	NA	NA	82	1,034	NA	1,034
1954	118	NA	118	62	5	67	NA	67	NA	NA	NA	67	1,165	NA	1,165
1955	144	NA	144	70	5	75	NA	75	NA	NA	NA	75	1,153	NA	1,153
1956	158	NA	158	67	5	73	NA	73	NA	NA	NA	73	1,239	NA	1,239
1957	161	NA	161	74	6	80	NA	80	NA	NA	NA	80	1,336	NA	1,336
1958	156	NA	156	72	6	78	NA	78	NA	NA	NA	78	1,373	NA	1,373
1959	168	NA	168	82	6	88	NA	88	NA	NA	NA	88	1,629	NA	1,629
1960	177	NA	177	84	4	88	NA	88	NA	NA	NA	88	1,725	NA	1,725
1961	182	NA	182	85	4	89	NA	89	NA	NA	NA	89	1,825	NA	1,825
1962	193	NA	193	85	4	89	NA	89	NA	NA	NA	89	1,966	NA	1,966
1963	211	NA	211	89	4	93	NA	93	NA	NA	NA	93	2,144	NA	2,144
1964	225	NA	225	97	4	101	NA	101	NA	NA	NA	101	2,323	NA	2,323
1965	245	NA	245	110	5	115	NA	115	NA	NA	NA	115	2,321	NA	2,321
1966	266	NA	266	135	6	141	NA	141	NA	NA	NA	141	2,610	NA	2,610
1967	274	NA	274	154	7	161	NA	161	NA	NA	NA	161	2,746	NA	2,746
1968	298	NA	298	179	10	189	NA	189	NA	NA	NA	189	3,148	NA	3,148
1969	311	NA	311	236	15	251	NA	251	NA	NA	NA	251	3,488	NA	3,488
1970	320	NA	320	311	24	336	1	339	NA	NA	NA	339	3,932	NA	3,932
1971	327	NA	327	362	34	396	1	399	NA	NA	NA	399	3,976	NA	3,976
1972	352	NA	352	440	53	494	1	497	NA	NA	NA	497	3,977	NA	3,977
1973	389	NA	389	513	47	560	1	563	NA	NA	NA	563	3,660	NA	3,660
1974	392	NA	392	483	53	536	1	539	NA	NA	NA	539	3,443	NA	3,443
1975	406	NA	406	467	39	506	(s)	506	NA	NA	NA	506	3,158	NA	3,158
1976	448	NA	448	514	42	556	(s)	556	NA	NA	NA	556	3,081	NA	3,081
1977	477	NA	477	575	49	624	(s)	624	NA	NA	NA	624	3,191	NA	3,191
1978	481	NA	481	588	48	636	(s)	638	NA	NA	NA	638	3,188	NA	3,188
1979	527	NA	527	493	31	523	(s)	525	NA	NA	NA	525	3,491	NA	3,491
1980	569	NA	569	391	29	420	(s)	421	NA	NA	NA	421	3,682	NA	3,682
1981	597	NA	597	330	21	351	(s)	352	NA	NA	NA	352	3,640	NA	3,640
1982	594	NA	594	234	15	250	(s)	251	NA	NA	NA	251	3,226	NA	3,226
1983	625	NA	625	229	17	245	(s)	247	NA	NA	NA	247	2,911	NA	2,911
1984	664	NA	664	189	15	204	(s)	206	NA	NA	NA	206	3,111	NA	3,111
1985	694	NA	694	159	15	173	(s)	175	NA	NA	NA	175	3,044	NA	3,044
1986	685	NA	685	216	14	230	(s)	232	NA	NA	NA	232	2,602	NA	2,602
1987	718	NA	718	184	15	199	(s)	201	NA	NA	NA	201	2,844	NA	2,844
1988	758	NA	758	229	19	248	(s)	250	NA	NA	NA	250	2,636	NA	2,636
1989[8]	767	31	798	242	25	267	1	270	28	NA	28	298	2,787	1,181	3,968
1990[8]	774	32	806	181	15	196	1	200	28	1	33	234	2,787	1,387	4,174
1991[8]	772	38	810	171	14	185	1	188	28	2	36	225	2,789	1,570	4,359
1992	780	45	824	136	12	147	1	152	32	3	46	198	2,766	1,845	4,610
1993	814	48	862	149	13	162	1	169	37	3	53	221	2,682	2,014	4,696
1994	817	52	870	135	16	151	1	155	42	5	66	221	2,987	2,149	5,136
1995	829	50	879	87	16	102	1	106	35	4	56	162	3,197	2,304	5,500
1996	875	53	928	96	17	113	1	117	38	4	61	178	2,732	2,448	5,180
1997	900	53	953	110	15	125	1	132	36	4	57	190	2,968	2,231	5,200
1998	911	57	968	157	22	179	2	187	54	4	77	264	3,258	2,666	5,924
1999[P]	897	72	968	126	23	149	2	157	50	2	60	217	3,125	[E]2,262	5,388

[1] Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.
[2] For 1949 to 1979, steam plant consumption of petroleum; for 1980 forward, fuel oil nos. 4, 5, and 6, and residual fuel oils.
[3] For 1949 to 1979, gas turbine and internal combustion plant use of petroleum; for 1980 forward, fuel oil nos. 1 and 2, kerosene, and jet fuel.
[4] Petroleum coke is converted at 5 barrels per short ton.
[5] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.
[6] Includes supplemental gaseous fuels.
[7] Natural gas only.
[8] Nonutility data for 1989-1991 were collected for facilities with capacities of 5 megawatts or more. In 1992, the threshold was lowered to include facilities with capacities of 1 megawatt or more. Estimates of the 1-to-5 megawatt range for 1989-1991 were derived from historical data. The estimation did not include retirements that occurred prior to 1992 and included only the capacity of facilities that came on line before 1992.

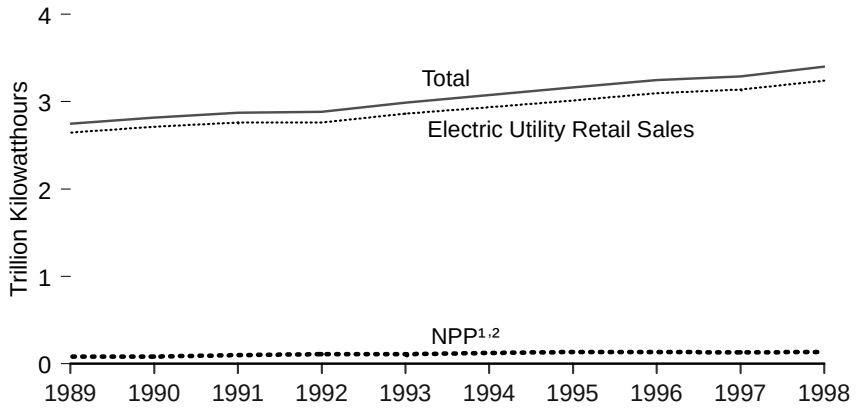
P=Preliminary. E=Estimated. NA=Not available. (s)=Less than 0.5 million short tons.

Notes: • Electric utility data are for fuels consumed to produce electricity only. Nonutility data prior to 1999 are for fuels consumed to produce both electricity and useful thermal output; nonutility data for 1999 are for fuels consumed to produce electricity only. • Due to restructuring of the electric power sector, the sale of generation assets is resulting in reclassification of plants from electric utility to nonutility plants. • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.

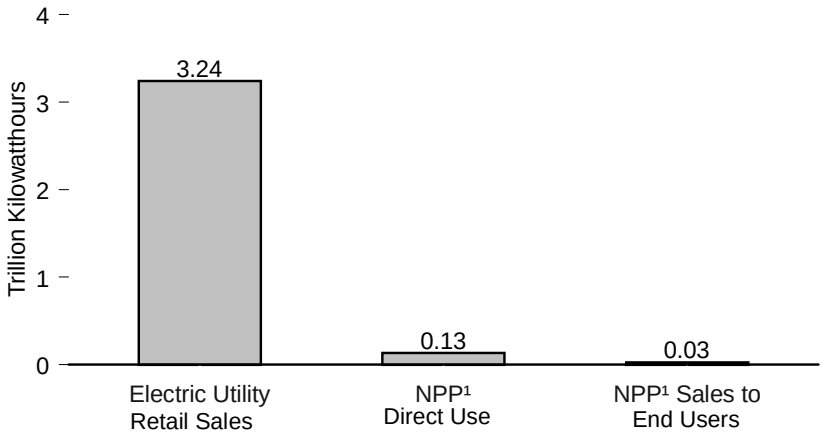
Sources: See end of section.

Figure 8.9 Electricity End Use

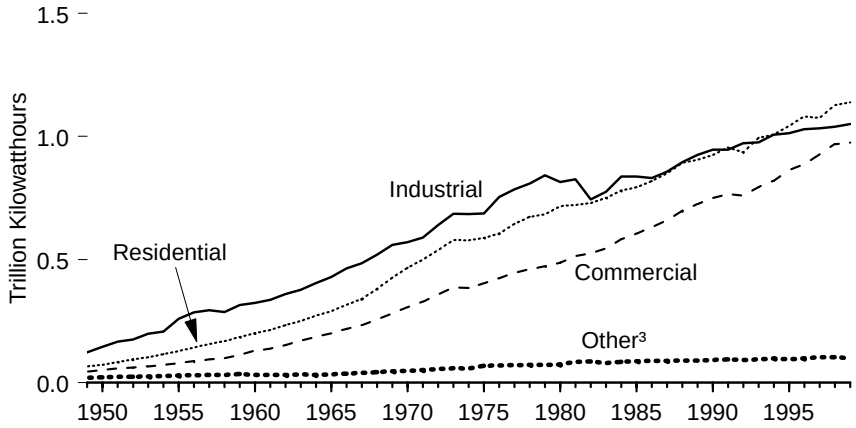
Overview, 1989-1998



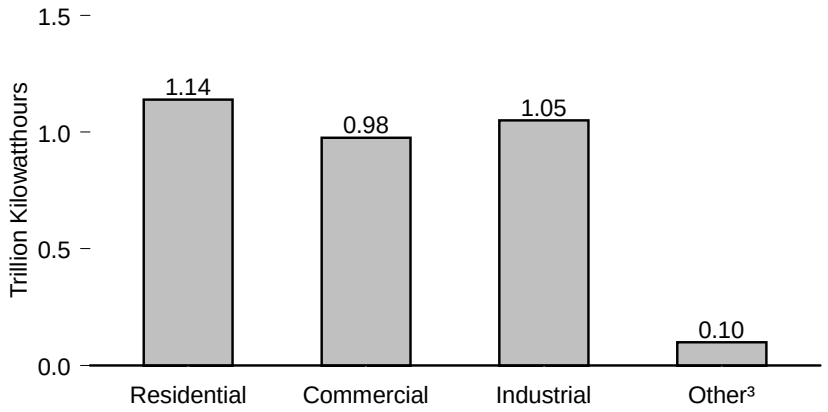
Overview, 1998



Electric Utility Retail Sales by Sector, 1949-1999



Electric Utility Retail Sales by Sector, 1999



[1] Nonutility power producer.

[2] Direct use and sales to end users.

[3] Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Note: Because vertical scales differ, graphs should not be compared.

Source: Table 8.9.

Table 8.9 Electricity End Use, 1949-1999

(Billion Kilowatthours)

Year	Electric Utility Retail Sales					Nonutility Power Producers		Total
	Residential	Commercial	Industrial	Other [1]	Total	Direct Use [2]	Sales to End Users	
1949	67	45	123	20	255	NA	NA	NA
1950	72	51	146	22	291	NA	NA	NA
1951	83	57	166	24	330	NA	NA	NA
1952	94	62	176	24	356	NA	NA	NA
1953	104	67	199	26	396	NA	NA	NA
1954	116	72	208	27	424	NA	NA	NA
1955	128	79	260	29	497	NA	NA	NA
1956	143	87	286	30	546	NA	NA	NA
1957	157	94	294	31	576	NA	NA	NA
1958	169	100	287	32	588	NA	NA	NA
1959	185	112	315	36	647	NA	NA	NA
1960	201	131	324	32	688	NA	NA	NA
1961	214	138	337	32	722	NA	NA	NA
1962	233	153	360	32	778	NA	NA	NA
1963	251	171	377	34	833	NA	NA	NA
1964	272	187	405	32	896	NA	NA	NA
1965	291	200	429	34	954	NA	NA	NA
1966	317	218	464	37	1,035	NA	NA	NA
1967	340	234	485	40	1,099	NA	NA	NA
1968	382	258	521	42	1,203	NA	NA	NA
1969	427	282	559	46	1,314	NA	NA	NA
1970	466	307	571	48	1,392	NA	NA	NA
1971	500	329	589	51	1,470	NA	NA	NA
1972	539	359	641	56	1,595	NA	NA	NA
1973	579	388	686	59	1,713	NA	NA	NA
1974	578	385	685	58	1,706	NA	NA	NA
1975	588	403	688	68	1,747	NA	NA	NA
1976	606	425	754	70	1,855	NA	NA	NA
1977	645	447	786	71	1,948	NA	NA	NA
1978	674	461	809	73	2,018	NA	NA	NA
1979	683	473	842	73	2,071	NA	NA	NA
1980	717	488	815	74	2,094	NA	NA	NA
1981	722	514	826	85	2,147	NA	NA	NA
1982	730	526	745	86	2,086	NA	NA	NA
1983	751	544	776	80	2,151	NA	NA	NA
1984	780	583	838	85	2,286	NA	NA	NA
1985	794	606	837	87	2,324	NA	NA	NA
1986	819	631	831	89	2,369	NA	NA	NA
1987	850	660	858	88	2,457	NA	NA	NA
1988	893	699	896	90	2,578	NA	NA	NA
1989	906	726	926	90	2,647	[3]83	[3]18	2,747
1990	924	751	946	92	2,713	[3]84	[3]20	2,817
1991	955	766	947	94	2,762	[3]100	[3]11	2,873
1992	936	761	973	93	2,763	111	11	2,885
1993	995	795	977	95	2,861	111	16	2,988
1994	1,008	820	1,008	98	2,935	123	18	3,075
1995	1,043	863	1,013	95	3,013	134	16	3,162
1996	1,082	887	1,030	98	3,098	135	14	3,247
1997	1,076	928	1,033	103	3,140	131	18	3,289
1998	[R]1,128	[R]969	[R]1,040	[R]104	[R]3,240	[R]134	[R]26	[R]3,400
1999[P]	1,139	975	1,050	100	3,265	NA	NA	NA

[1] Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

[2] Facility use of onsite net electricity generation.

[3] Data for 1989-1991 were collected for facilities with capacities of 5 megawatts or more. In 1992, the threshold was lowered to include facilities with capacities of 1 megawatt or more. Estimates of the 1-to-5 megawatt range for 1989-1991 were derived from historical data. The estimation did not include retirements that occurred prior to 1992 and included only the capacity of facilities that came on line before 1992.

R=Revised. P=Preliminary. NA=Not available.

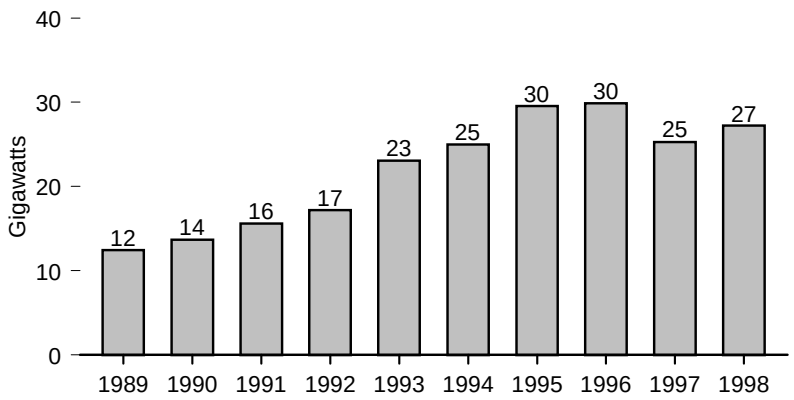
Notes: • See Note 4 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

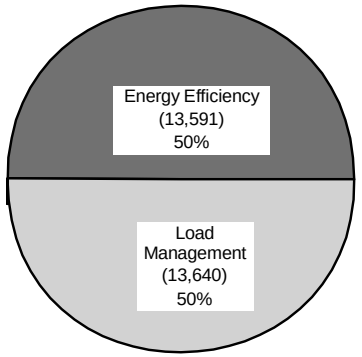
Sources: • 1949-September 1977—Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income." • October 1977-February 1980—Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenue and Income." • March 1980-1982—FERC, Form FPC-5, "Electric Utility Company Monthly Statement." • 1983—Energy Information Administration (EIA), Form EIA-826, "Electric Utility Company Monthly Statement." • 1984-1988—EIA, Form EIA-861, "Annual Electric Utility Report." • 1989 forward—EIA, *Electric Power Monthly* (March 2000), Table 44, and EIA, Form EIA-860B, "Annual Electric Generator Report-Nonutility" and predecessor form.

Figure 8.10 Electric Utility Demand-Side Management Programs: Peakload Reductions, Energy Savings, and Costs

Actual Peakload Reductions, Total of All Programs, 1989-1998

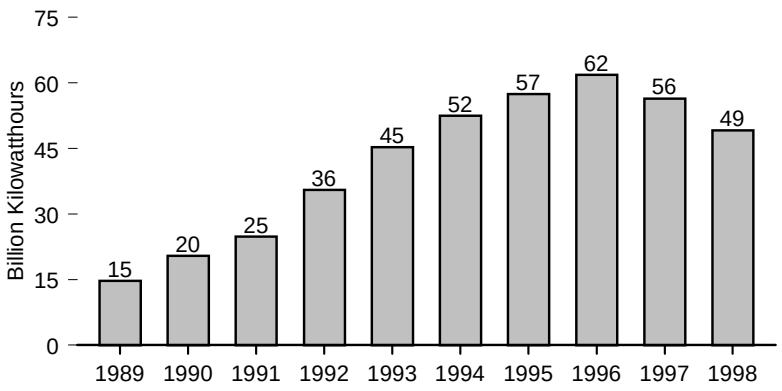


Actual Peakload Reductions by Program, 1998

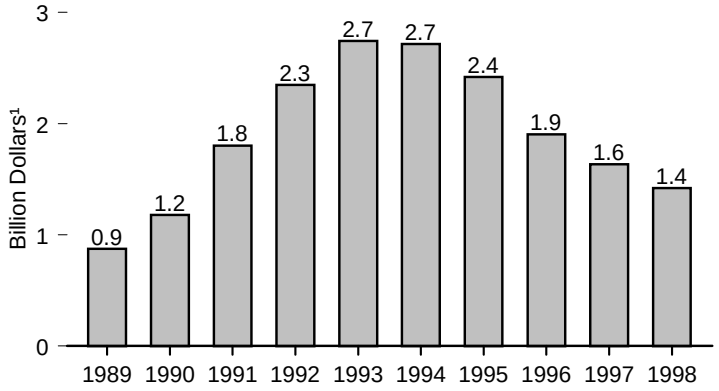


Total: 27,231 Megawatts

Energy Savings, 1989-1998



Costs, 1989-1998



¹ Nominal dollars.

Source: Table 8.10.

Table 8.10 Electric Utility Demand-Side Management Programs: Peakload Reductions, Energy Savings, and Costs, 1989-1998

Year	Actual Peakload Reductions [1] (megawatts)			Energy Savings (million kilowatthours)	Costs (thousand dollars [4])
	Load Management [2]	Energy Efficiency [3]	Total		
1989	NA	NA	12,463	14,672	872,935
1990	7,911	[5]5,793	13,704	20,458	1,177,457
1991	8,767	[5]6,852	15,619	24,848	1,803,773
1992	7,357	[5]9,847	17,204	35,563	2,348,094
1993	10,583	[5]12,486	23,069	45,294	2,743,533
1994	10,922	[5]14,079	25,001	52,483	2,715,657
1995	13,753	[5]15,807	29,561	57,421	2,421,261
1996	12,965	[5]16,928	29,893	61,842	1,902,197
1997	11,958	13,326	25,284	56,406	1,636,020
1998	13,640	13,591	27,231	49,167	1,420,920

[1] The actual reduction in peak load reflects the change in demand for electricity that results from a utility demand-side management program that is in effect at the time that the utility experiences its actual peak load as opposed to the potential installed peakload reduction capability. Differences between actual and potential peak reduction result from changes in weather, economic activity, and other variable conditions.

[2] Load Management includes programs such as Direct Load Control and Interruptible Load Control, and beginning in 1997, "other types" of demand-side management programs. Direct load control refers to program activities that can interrupt consumer load at the time of annual peak load by direct control of the utility system operator by interrupting power supply to individual appliances or equipment on consumer premises. This type of control usually involves residential consumers. Interruptible load refers to program activities that, in accordance with contractual arrangements, can interrupt consumer load at times of seasonal peak load by direct control of the utility system operator or by action of the consumer at the direct request of the system operator. It usually involves commercial and industrial consumers. In some instances, the load reduction may be affected by direct action of the system operator (remote tripping) after notice to the consumer in accordance with contractual provisions. "Other types" are programs that limit or shift peak loads from on-peak to off-peak time periods, such as space heating and water heating storage systems.

[3] Energy efficiency refers to programs that are aimed at reducing the energy used by specific end-use devices and systems, typically without affecting the services provided. These programs reduce overall electricity consumption, often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technically more advanced equipment to produce the same level of end-use services (e.g., lighting, heating, motor drive) with less electricity. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating, and air conditioning systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.

[4] Nominal dollars.

[5] From 1989 to 1996, Energy Efficiency includes "other types" of demand-side management programs. Beginning in 1997, these programs are included under Load Management.

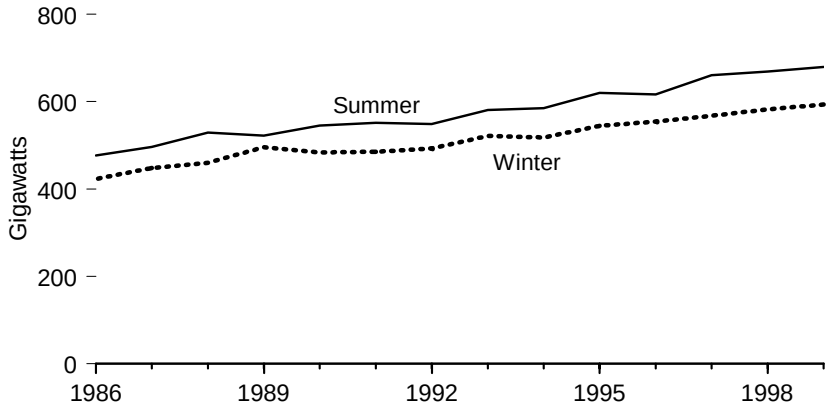
NA=Not available.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

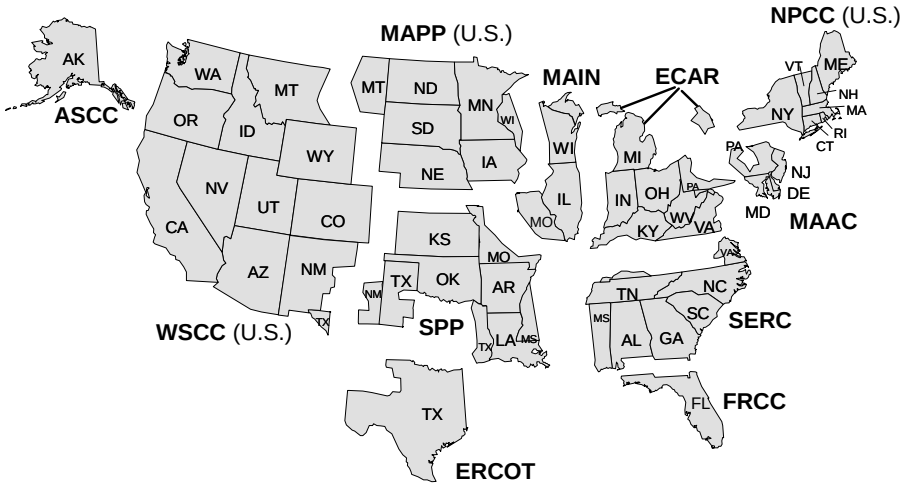
Sources: • 1989-1993—Energy Information Administration (EIA), *Electric Power Annual 1993* (December 1994). • 1994 forward—EIA, *Electric Power Annual 1998, Volume II* (October 1999), Tables 45, 48, and 49.

Figure 8.11 Electric Utility Noncoincidental Peak Load

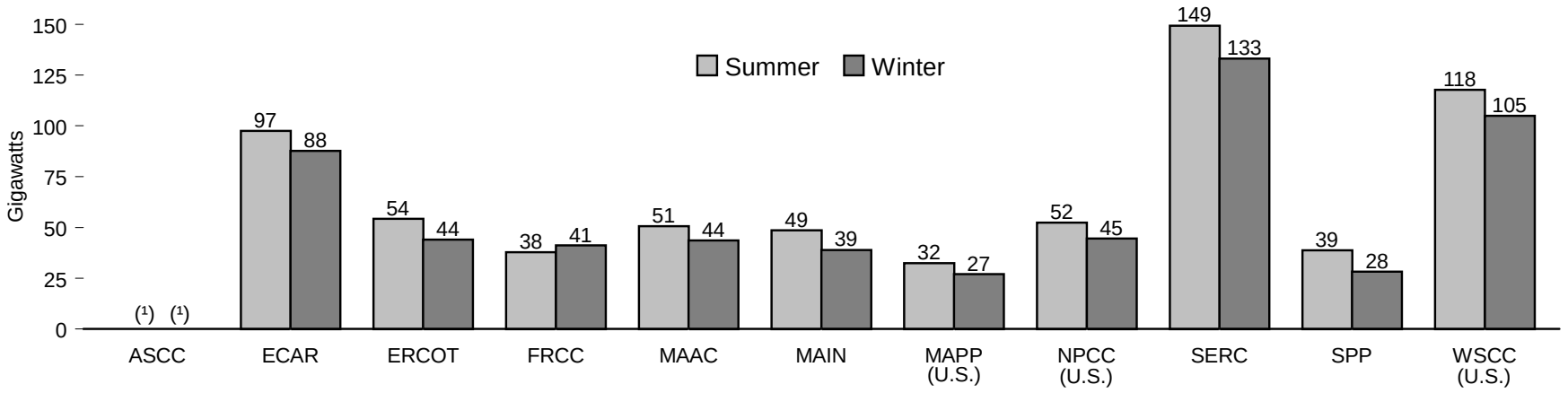
In the Contiguous United States, 1986-1999



North American Electric Reliability Council Map for the United States



By NERC Region, 1999



[1] Data for ASCC (Alaska) were not filed for 1999.

Notes: • Noncoincidental peak load is the sum of two or more peak loads on individual systems that do not occur at the same time interval. See Glossary for information on North American Electric Reliability Council (NERC). • Because vertical scales differ, graphs should not be compared.

Source: Table 8.11.

Table 8.11 Electric Utility Noncoincidental Peak Load by Region, 1986-1999

(Megawatts)

Year	North American Electric Reliability Council Regions [1]										Contiguous United States	ASCC (Alaska)
	ECAR	ERCOT	FRCC	MAAC	MAIN	MAPP (U.S.)	NPCC (U.S.)	SERC	SPP	WSCC (U.S.)		
	Summer											
1986	69,606	39,335	—	37,564	35,943	21,029	39,026	105,570	47,123	81,787	476,983	([2])
1987	72,561	39,339	—	40,526	37,446	23,162	42,651	109,798	47,723	82,967	496,173	([2])
1988	79,149	40,843	—	43,110	41,139	24,899	45,245	115,168	49,356	90,551	529,460	([2])
1989	75,442	40,402	—	41,614	39,460	23,531	45,031	117,051	49,439	90,657	522,627	455
1990	79,258	42,737	—	42,613	40,740	24,994	44,116	121,149	52,541	97,389	545,537	463
1991	81,539	41,870	—	45,937	41,598	25,498	46,594	124,688	51,885	92,096	551,705	471
1992	78,550	42,619	—	43,658	38,819	22,638	43,658	128,236	51,324	99,205	548,707	504
1993	85,930	44,255	—	46,494	41,956	24,396	46,706	136,101	57,106	97,809	580,753	511
1994	87,165	44,162	—	46,019	42,562	27,000	47,581	132,584	56,035	102,212	585,320	524
1995	92,619	46,618	—	48,577	45,782	29,192	47,705	146,569	59,595	103,592	620,249	622
1996	90,798	47,480	—	44,302	46,402	28,253	45,094	145,650	60,072	108,739	616,790	([3])
1997	R93,784	R54,666	R38,730	R48,445	R47,509	R30,722	R49,566	R143,226	R37,724	R115,921	R660,293	([3])
1998	R95,675	R53,330	R37,327	R49,807	R47,875	R31,991	R51,760	R147,223	R38,180	R115,901	R669,069	([3])
1999F	97,475	54,199	37,864	50,576	48,542	32,406	52,415	149,380	38,795	117,874	679,526	([3])
	Winter											
1986	64,561	28,730	—	32,807	28,036	18,850	37,976	101,849	33,877	76,171	422,857	([2])
1987	68,118	31,399	—	35,775	30,606	19,335	41,902	105,476	34,472	81,182	448,265	([2])
1988	67,771	34,621	—	36,363	30,631	20,162	42,951	108,649	35,649	82,937	459,734	([2])
1989	73,080	38,388	—	38,161	33,770	20,699	42,588	121,995	42,268	84,768	495,717	626
1990	67,097	35,815	—	36,551	32,461	21,113	40,545	117,231	38,949	94,252	484,014	613
1991	71,181	35,448	—	37,983	33,420	21,432	41,786	119,575	38,759	86,097	485,681	622
1992	72,885	35,055	—	37,915	31,289	21,866	41,125	121,250	39,912	91,686	492,983	635
1993	81,846	35,407	—	41,406	34,966	21,955	42,063	133,635	41,644	88,811	521,733	632
1994	75,638	36,180	—	40,653	33,999	23,033	42,547	132,661	42,505	91,037	518,253	641
1995	83,465	36,965	—	40,790	35,734	23,429	42,755	142,032	44,626	94,890	544,686	676
1996	84,534	38,868	—	40,468	37,162	24,251	41,208	143,060	49,095	95,435	554,081	([3])
1997	R84,401	R41,876	R39,975	R36,532	R37,410	R26,080	R44,199	R127,416	R27,847	R101,822	R567,558	([3])
1998	R86,020	R42,574	R40,165	R43,009	R38,170	R26,781	R44,160	R130,738	R27,986	R103,087	R582,690	([3])
1999F	87,748	44,061	41,176	43,628	38,945	26,980	44,550	133,116	28,311	104,936	593,451	([3])

[1] See Glossary for information on the North American Electric Reliablility Council (NERC). This table includes the U.S. portion of NERC only and does not cover Hawaii, Puerto Rico, and U.S. Trust Territories. See Figure 8.11 for an illustration of NERC regions.

[2] Data submission for ASCC (Alaska) began in 1989.

[3] Data for ASCC (Alaska) were not filed for 1996, 1997, 1998, or 1999.

R=Revised. F=Forecast. — = Not applicable.

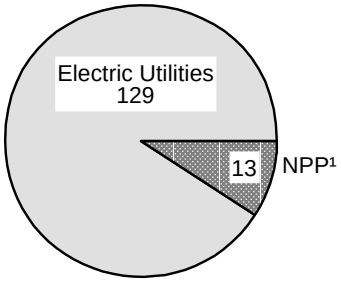
Note: Noncoincidental peak load is the sum of two or more peak loads on individual systems that do not occur at the same time interval.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: • 1986-1990—Energy Information Administration (EIA), *Electric Power Annual 1990* (January 1992), Table 53. • 1991-1993—EIA, *Electric Power Annual 1994, Volume II* (November 1995), Table 35. • 1994 forward—EIA, *Electric Power Annual 1998, Volume II* (December 1999), Table 35.

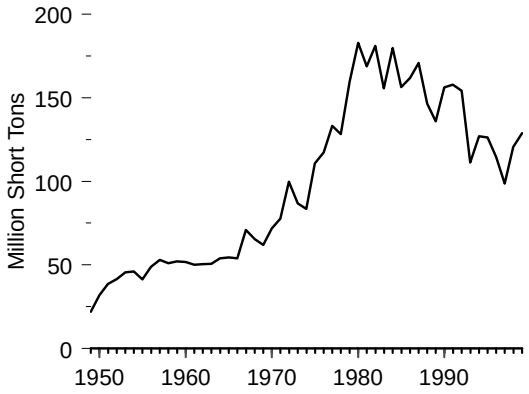
Figure 8.12 Electric Power Sector Stocks of Coal and Petroleum

Coal Stocks, 1999

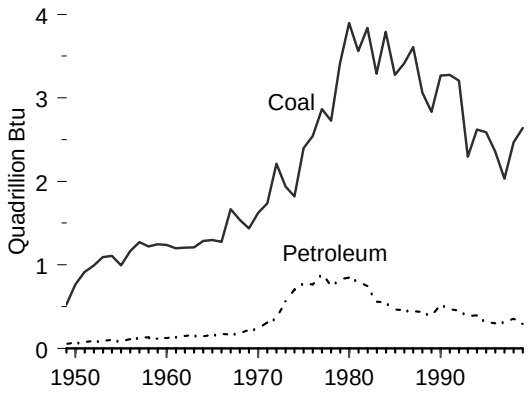


Total: 142 million short tons

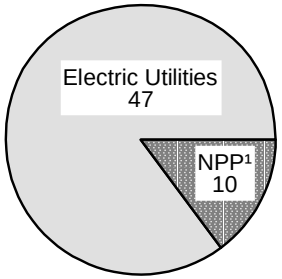
Coal Stocks at Electric Utilities, 1949-1999



Coal and Petroleum Stocks at Electric Utilities, 1949-1999

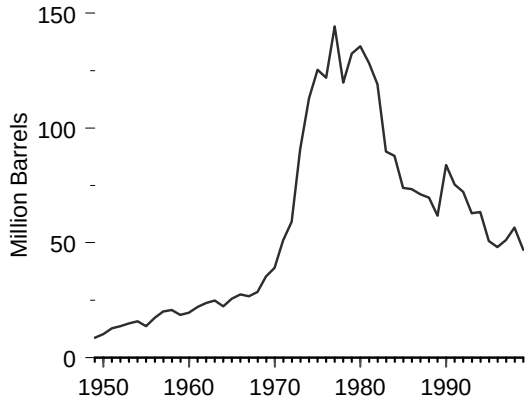


Petroleum Stocks, 1999

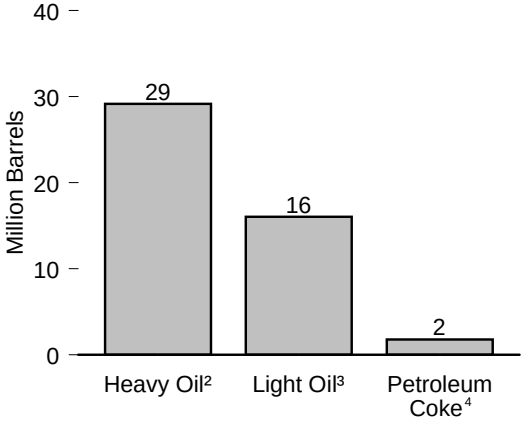


Total: 57 million barrels

Petroleum Stocks at Electric Utilities, 1949-1999



Petroleum Stocks at Electric Utilities by Type, 1999



[1] Nonutility power producers.
[2] Fuel oil nos. 4, 5, and 6, and residual fuel oils.
[3] Fuel oil nos. l and 2, heating oil, kerosene, and jet fuel.
[4] Petroleum coke, which is reported in short tons, is converted at a rate of 5 barrels per short ton.
Note: Because vertical scales differ, graphs should not be compared.
Source: Tables 8.12, A3, and A5.

Table 8.12 Electric Power Sector Stocks of Coal and Petroleum, 1949-1999

Year	Coal			Petroleum								
				Electric Utilities					Nonutility Power Producers			
	Electric Utilities	Nonutility Power Producers	Total Electric Power Sector	Heavy Oil [1]	Light Oil [2]	Liquids	Petroleum Coke	Total [3]	Liquids	Petroleum Coke	Total [3]	Total Electric Power Sector
	Million Short Tons			Million Barrels			Million Short Tons	Million Barrels	Million Barrels	Million Short Tons	Million Barrels	Million Barrels
1949	22.1	NA	22.1	NA	NA	8.6	NA	8.6	NA	NA	NA	8.6
1950	31.8	NA	31.8	NA	NA	10.2	NA	10.2	NA	NA	NA	10.2
1951	38.5	NA	38.5	NA	NA	12.8	NA	12.8	NA	NA	NA	12.8
1952	41.5	NA	41.5	NA	NA	13.7	NA	13.7	NA	NA	NA	13.7
1953	45.6	NA	45.6	NA	NA	15.0	NA	15.0	NA	NA	NA	15.0
1954	46.1	NA	46.1	NA	NA	15.9	NA	15.9	NA	NA	NA	15.9
1955	41.4	NA	41.4	NA	NA	13.7	NA	13.7	NA	NA	NA	13.7
1956	48.8	NA	48.8	NA	NA	17.3	NA	17.3	NA	NA	NA	17.3
1957	53.1	NA	53.1	NA	NA	20.1	NA	20.1	NA	NA	NA	20.1
1958	51.0	NA	51.0	NA	NA	20.8	NA	20.8	NA	NA	NA	20.8
1959	52.1	NA	52.1	NA	NA	18.5	NA	18.5	NA	NA	NA	18.5
1960	51.7	NA	51.7	NA	NA	19.6	NA	19.6	NA	NA	NA	19.6
1961	50.1	NA	50.1	NA	NA	22.0	NA	22.0	NA	NA	NA	22.0
1962	50.4	NA	50.4	NA	NA	23.8	NA	23.8	NA	NA	NA	23.8
1963	50.6	NA	50.6	NA	NA	24.9	NA	24.9	NA	NA	NA	24.9
1964	53.9	NA	53.9	NA	NA	22.4	NA	22.4	NA	NA	NA	22.4
1965	54.5	NA	54.5	NA	NA	25.6	NA	25.6	NA	NA	NA	25.6
1966	53.9	NA	53.9	NA	NA	27.4	NA	27.4	NA	NA	NA	27.4
1967	71.0	NA	71.0	NA	NA	26.7	NA	26.7	NA	NA	NA	26.7
1968	65.5	NA	65.5	NA	NA	28.7	NA	28.7	NA	NA	NA	28.7
1969	61.9	NA	61.9	NA	NA	35.3	NA	35.3	NA	NA	NA	35.3
1970	71.9	NA	71.9	NA	NA	38.0	0.2	39.2	NA	NA	NA	38.0
1971	77.8	NA	77.8	NA	NA	49.6	0.3	51.1	NA	NA	NA	49.6
1972	99.7	NA	99.7	NA	NA	57.7	0.3	59.1	NA	NA	NA	57.7
1973	87.0	NA	87.0	79.1	10.1	89.2	0.3	90.8	NA	NA	NA	90.8
1974	83.5	NA	83.5	97.7	15.2	112.9	(s)	113.1	NA	NA	NA	113.1
1975	110.7	NA	110.7	108.8	16.4	125.3	(s)	125.4	NA	NA	NA	125.4
1976	117.4	NA	117.4	107.0	14.7	121.7	(s)	121.9	NA	NA	NA	121.9
1977	133.2	NA	133.2	124.7	19.3	144.0	(s)	144.3	NA	NA	NA	144.3
1978	128.2	NA	128.2	102.4	16.4	118.8	0.2	119.8	NA	NA	NA	119.8
1979	159.7	NA	159.7	111.1	20.3	131.4	0.2	132.3	NA	NA	NA	132.3
1980	183.0	NA	183.0	105.4	30.0	135.4	0.1	135.6	NA	NA	NA	135.6
1981	168.9	NA	168.9	102.0	26.1	128.1	(s)	128.3	NA	NA	NA	128.3
1982	181.1	NA	181.1	95.5	23.4	118.9	(s)	119.1	NA	NA	NA	119.1
1983	155.6	NA	155.6	70.6	18.8	89.4	0.1	89.7	NA	NA	NA	89.7
1984	179.7	NA	179.7	68.5	19.1	87.6	0.1	87.9	NA	NA	NA	87.9
1985	156.4	NA	156.4	57.3	16.4	73.7	(s)	73.9	NA	NA	NA	73.9
1986	161.8	NA	161.8	56.8	16.3	73.1	(s)	73.3	NA	NA	NA	73.3
1987	170.8	NA	170.8	55.1	15.8	70.8	0.1	71.1	NA	NA	NA	71.1
1988	146.5	NA	146.5	54.2	15.1	69.3	0.1	69.7	NA	NA	NA	69.7
1989	135.9	NA	135.9	47.4	13.8	61.3	0.1	61.8	NA	NA	NA	61.8
1990	156.2	NA	156.2	67.0	16.5	83.5	0.1	84.0	NA	NA	NA	84.0
1991	157.9	NA	157.9	58.6	16.4	75.0	0.1	75.3	NA	NA	NA	75.3
1992	154.1	NA	154.1	56.1	15.7	71.8	0.1	72.2	NA	NA	NA	72.2
1993	111.3	NA	111.3	46.8	15.7	62.4	0.1	62.9	NA	NA	NA	62.9
1994	126.9	NA	126.9	46.3	16.6	63.0	0.1	63.3	NA	NA	NA	63.3
1995	126.3	NA	126.3	35.1	15.4	50.5	0.1	50.8	NA	NA	NA	50.8
1996	114.6	NA	114.6	32.5	15.2	47.7	0.1	48.1	NA	NA	NA	48.1
1997	98.8	NA	98.8	33.3	15.5	48.8	0.5	51.1	NA	NA	NA	51.1
1998	120.5	NA	120.5	37.4	16.3	53.8	0.6	56.6	NA	NA	NA	56.6
1999[P]	128.9	13.4	142.3	29.2	16.0	45.2	0.4	47.0	9.7	0.1	10.4	57.4

[1] For 1973 to 1979, steam plant stocks of petroleum; for 1980 forward, fuel oil nos. 4, 5, and 6, and residual fuel oils.

[2] For 1973 to 1979, gas turbine and internal combustion plant stocks of petroleum; for 1980 forward, fuel oil nos. 1 and 2, kerosene, and jet fuel.

[3] Petroleum coke is converted at 5 barrels per short ton.

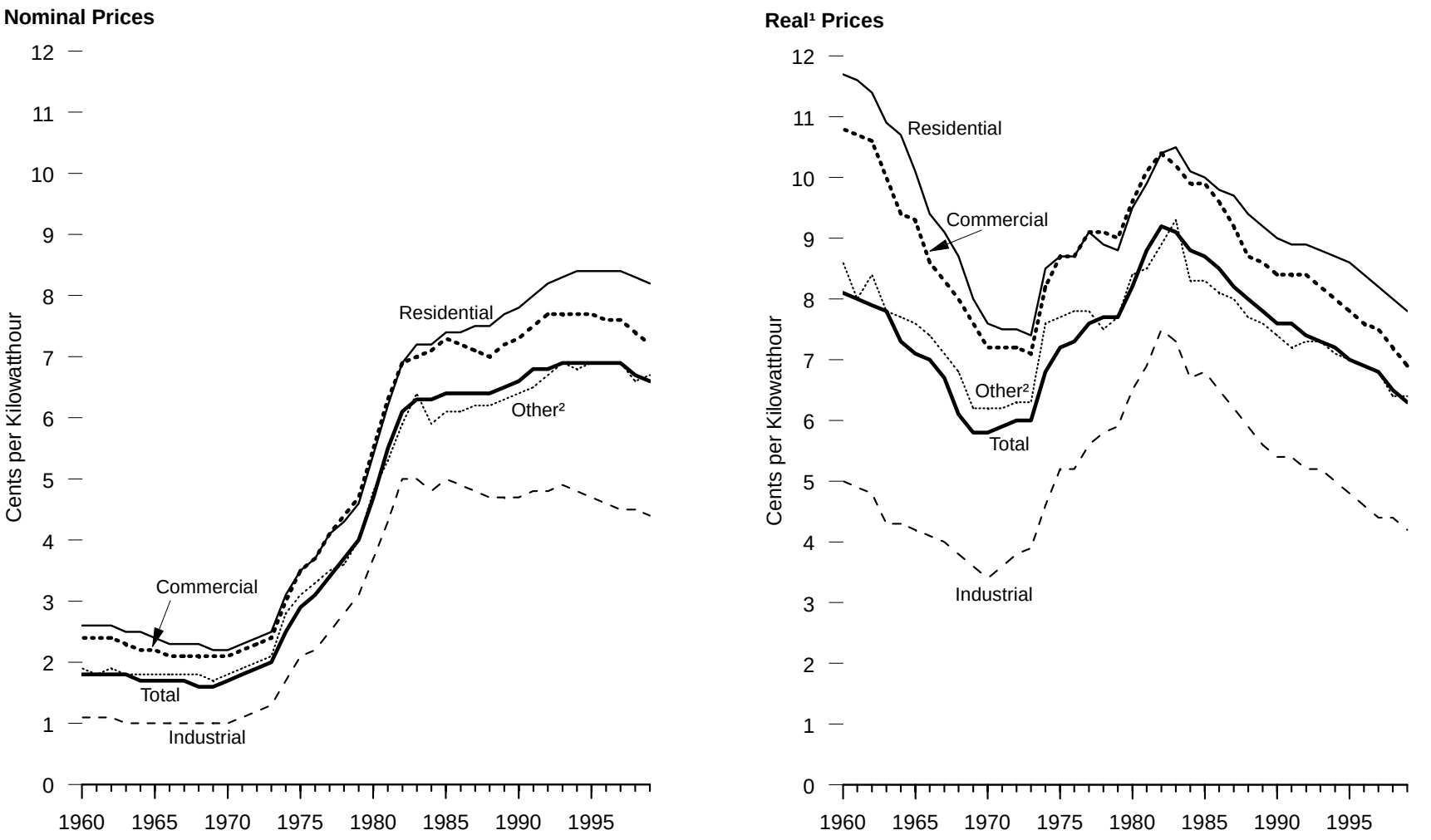
P=Preliminary. NA=Not available. (s)=Less than 0.05 million short tons.

Notes: • Stocks are at end of year. • Data are for fuels available to produce electricity; they may include some fuels available to produce useful thermal output at cogeneration plants. • See Note 2 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Sources: • 1949-September 1977—Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977-1981—Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982-1988—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report." • 1989 forward—EIA, *Electric Power Monthly* (March 2000), Tables 21 and 71.

Figure 8.13 Retail Prices of Electricity Sold by Electric Utilities, 1960-1999



¹ In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. SeeTable E1.

² Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Source: Table 8.13.

Table 8.13 Retail Prices of Electricity Sold by Electric Utilities, 1960-1999

(Cents per Kilowatthour)

Year	Residential		Commercial		Industrial		Other [1]		Total	
	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]	Nominal	Real [2]
1960	2.6	R11.7	2.4	R10.8	1.1	R5.0	1.9	R8.6	1.8	R8.1
1961	2.6	R11.6	2.4	R10.7	1.1	R4.9	1.8	R8.0	1.8	R8.0
1962	2.6	R11.4	2.4	R10.6	1.1	R4.8	1.9	R8.4	1.8	R7.9
1963	2.5	R10.9	2.3	R10.0	1.0	R4.3	1.8	R7.8	1.8	R7.8
1964	2.5	R10.7	2.2	R9.4	1.0	R4.3	1.8	R7.7	1.7	R7.3
1965	2.4	R10.1	2.2	R9.3	1.0	R4.2	1.8	R7.6	1.7	R7.1
1966	2.3	R9.4	2.1	R8.6	1.0	R4.1	1.8	R7.4	1.7	R7.0
1967	2.3	R9.1	2.1	R8.3	1.0	R4.0	1.8	R7.1	1.7	R6.7
1968	2.3	R8.7	2.1	R8.0	1.0	R3.8	1.8	R6.8	1.6	R6.1
1969	2.2	R8.0	2.1	R7.6	1.0	R3.6	1.7	R6.2	1.6	R5.8
1970	2.2	R7.6	2.1	R7.2	1.0	R3.4	1.8	R6.2	1.7	R5.8
1971	2.3	R7.5	2.2	R7.2	1.1	R3.6	1.9	R6.2	1.8	R5.9
1972	2.4	R7.5	2.3	R7.2	1.2	R3.8	2.0	R6.3	1.9	R6.0
1973	2.5	R7.4	2.4	R7.1	1.3	R3.9	2.1	R6.3	2.0	R6.0
1974	3.1	R8.5	3.0	R8.2	1.7	R4.6	2.8	R7.6	2.5	R6.8
1975	3.5	R8.7	3.5	R8.7	2.1	R5.2	3.1	R7.7	2.9	R7.2
1976	3.7	R8.7	3.7	R8.7	2.2	R5.2	3.3	R7.8	3.1	R7.3
1977	4.1	R9.1	4.1	R9.1	2.5	R5.6	3.5	R7.8	3.4	R7.6
1978	4.3	R8.9	4.4	R9.1	2.8	R5.8	3.6	R7.5	3.7	R7.7
1979	4.6	R8.8	4.7	R9.0	3.1	R5.9	4.0	R7.7	4.0	R7.7
1980	5.4	R9.5	5.5	R9.6	3.7	R6.5	4.8	R8.4	4.7	R8.2
1981	6.2	R9.9	6.3	R10.1	4.3	R6.9	5.3	R8.5	5.5	R8.8
1982	6.9	R10.4	6.9	R10.4	5.0	R7.5	5.9	R8.9	6.1	R9.2
1983	7.2	R10.5	7.0	R10.2	5.0	R7.3	6.4	R9.3	6.3	R9.1
1984	7.15	R10.01	7.13	R9.98	4.83	R6.76	5.90	R8.26	6.25	R8.75
1985	7.39	R10.03	7.27	R9.87	4.97	R6.74	6.09	R8.26	6.44	R8.74
1986	7.42	R9.85	7.20	R9.56	4.93	R6.55	6.11	R8.11	6.44	R8.55
1987	7.45	R9.60	7.08	R9.13	4.77	R6.15	6.21	R8.00	6.37	R8.21
1988	7.48	R9.33	7.04	R8.78	4.70	R5.86	6.20	R7.73	6.35	R7.92
1989	7.65	R9.19	7.20	R8.65	4.72	R5.67	6.25	R7.51	6.45	R7.75
1990	7.83	R9.05	7.34	R8.48	4.74	R5.48	6.40	R7.40	6.57	R7.59
1991	8.04	R8.97	7.53	R8.40	4.83	R5.39	6.51	R7.26	6.75	R7.53
1992	8.21	R8.94	7.66	R8.34	4.83	R5.26	6.74	R7.34	6.82	R7.43
1993	8.32	R8.85	7.74	R8.23	4.85	R5.16	6.88	R7.32	6.93	R7.37
1994	8.38	R8.73	7.73	R8.05	4.77	R4.97	6.84	R7.12	6.91	R7.20
1995	8.40	R8.56	7.69	R7.84	4.66	R4.75	6.88	R7.01	6.89	R7.02
1996	8.36	R8.36	7.64	R7.64	4.60	R4.60	6.91	R6.91	6.86	R6.86
1997	8.43	R8.27	7.59	R7.45	4.53	R4.45	6.91	R6.78	6.85	R6.72
1998	8.26	R8.01	7.41	R7.19	4.48	R4.34	6.63	R6.43	6.74	R6.54
1999P	8.17	7.81	7.20	6.88	4.42	4.23	6.74	6.44	6.63	6.34

[1] Public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

[2] In chained (1996) dollars, calculated by using gross domestic product implicit price deflators. See Table E1.

R=Revised. P=Preliminary.

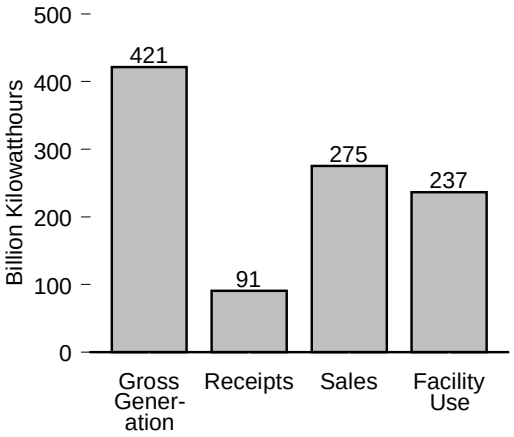
Note: Data for 1979 and earlier data are for Classes A and B privately owned electric utilities only. Data for 1980 forward are for selected Class A utilities whose electric operating revenues were $100 million or more during the previous year.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

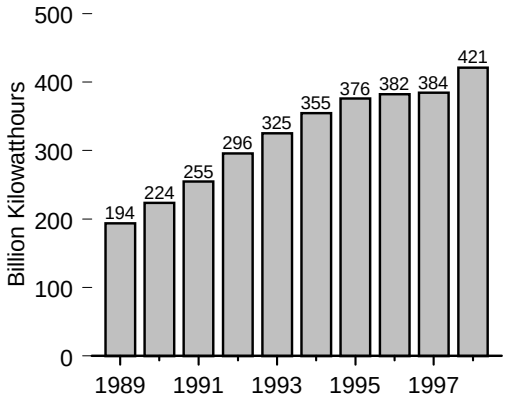
Sources: • 1960 through September 1977—Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • October 1977 through February 1980—Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • March 1980 through 1982—FERC, Form FERC-5, "Electric Utility Company Monthly Statement." • 1983—Energy Information Administration (EIA), Form EIA-826, "Electric Utility Company Monthly Statement." • 1984-1988—EIA, Form EIA-861, "Annual Electric Utility Report." • 1989 forward—EIA, *Electric Power Monthly* (March 2000), Table 52.

Figure 8.14 Nonutility Power Producer Overview

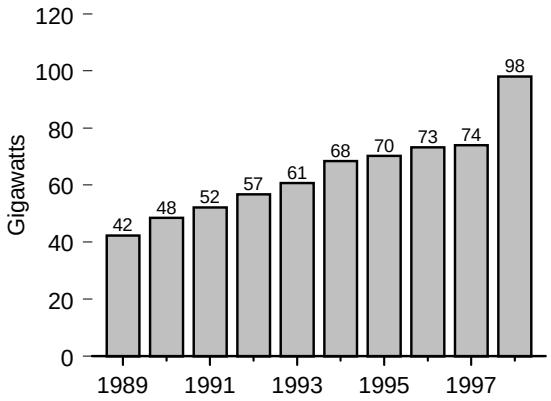
Supply and Disposition, 1998



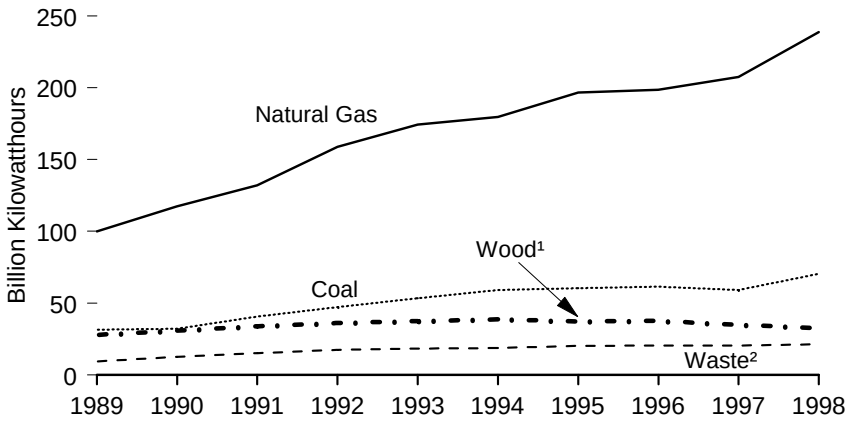
Gross Generation, 1989-1998



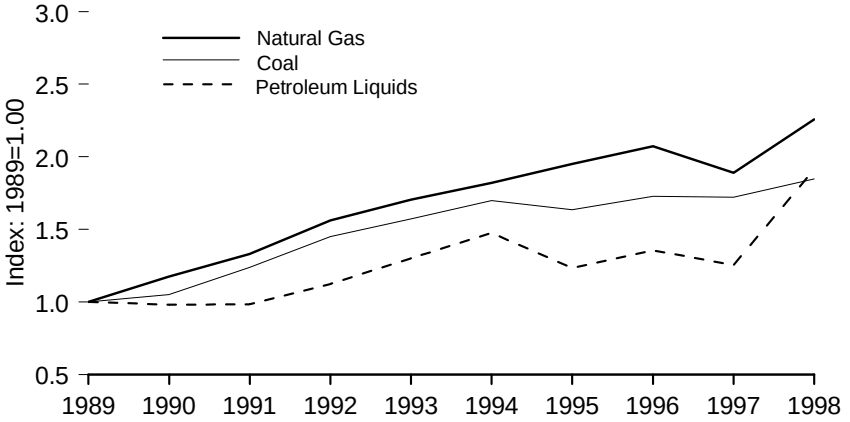
Installed Capacity, 1989-1998



Gross Generation by Selected Fuel Type, 1989-1998



Fossil Fuel Consumption by Selected Fuel Type, Indexed, 1989-1998



[1] See Table 8.14, footnote 14.
[2] See Table 8.14, footnotes 15, 16, and 17.
Notes: • Nonutility electric generating facilities with a total generator capacity of 1 megawatt or greater. See Table 8.14 for a description of fuels. • Due to restructuring of the electric power sector, the sale of generation assets is resulting in reclassification of plants from electric utility to nonutility plants. • Because vertical scales differ, graphs should not be compared.
Source: Table: 8.14.

Table 8.14 Nonutility Power Producer Overview, 1989-1998

Item	1989[1]	1990[1]	1991[1]	1992	1993	1994	1995	1996	1997	1998
Supply and Disposition										
(million kilowatthours)										
Gross Generation	R**193,578**	R**223,786**	R**254,594**	**296,001**	**325,226**	**354,925**	**375,901**	**382,423**	R**384,496**	R**421,364**
Receipts [2]	R61,479	R63,743	R68,264	83,421	85,323	94,166	89,919	103,219	R88,506	R90,675
Sales to Utilities [3]	81,229	106,224	129,118	164,374	187,466	204,688	217,906	224,646	R223,532	R249,483
Sales to End Users [4]	17,687	19,824	11,419	10,786	15,569	17,626	15,548	14,284	R18,147	R25,777
Facility Use [5]	R156,141	R161,482	R182,321	204,261	207,514	226,777	232,367	246,713	R231,323	R236,779
Fossil Fuel Consumption [6]										
Coal [7] (thousand short tons)	30,762	R32,311	R38,119	44,607	48,343	52,261	R50,329	53,199	R52,913	R56,849
Petroleum Liquids [8] (thousand barrels)	28,377	R27,878	R27,882	R31,876	R36,960	R41,889	R35,031	R38,444	R35,594	R54,275
Petroleum Coke (thousand short tons)	NA	1,108	1,629	2,750	3,182	4,740	4,188	4,484	4,364	4,470
Natural Gas [9] (million cubic feet)	1,181,015	1,386,741	1,569,850	1,844,857	2,013,788	2,149,246	2,303,944	2,447,720	R2,231,363	R2,666,430
Gross Generation										
(million kilowatthours)	R**193,578**	R**223,786**	R**254,594**	**296,001**	**325,226**	**354,925**	**375,901**	**382,423**	R**384,496**	R**421,364**
Coal [7]	31,511	32,131	40,587	47,363	53,367	59,035	60,234	61,375	R59,211	R70,369
Petroleum [10]	5,742	7,330	7,814	10,963	13,364	15,069	15,049	14,959	R15,930	R17,533
Natural Gas [11]	R100,003	R117,399	R132,014	158,798	174,282	179,735	196,633	198,555	R207,527	R238,747
Other Gas [12]	([13])	([13])	([13])	([13])	([13])	R12,478	R13,919	R14,604	R11,514	R8,802
Nuclear Electric Power	49	116	80	67	78	54	0	0	0	0
Conventional Hydroelectric Power	R8,689	R9,676	R9,541	9,446	11,511	13,227	14,774	16,555	R17,902	R14,633
Geothermal	R5,708	R7,430	R8,200	8,578	9,749	10,122	9,912	10,198	R9,382	R9,882
Wood [14]	27,835	30,812	33,785	36,255	37,421	38,595	37,283	37,525	R34,898	R32,596
MSW [15] and LFG [16]	R7,787	R10,613	R12,262	14,050	14,489	R15,404	R16,901	R16,348	R17,536	R18,101
Other Waste [17]	R1,562	R1,840	R2,875	3,303	3,835	3,394	R3,395	R4,210	R2,883	R3,050
Wind	R2,302	R3,066	R3,050	2,916	3,052	3,482	3,185	3,400	R3,248	R3,015
Solar [18]	R640	663	779	746	897	824	824	903	893	R887
Other [19]	1,750	2,710	3,609	3,516	3,181	3,507	3,792	3,793	R3,572	R3,750
Installed Capacity [20]										
(megawatts)	R**42,358**	R**48,473**	R**52,186**	**56,814**	**60,778**	**68,461**	**70,254**	**73,189**	R**74,004**	R**98,085**
Coal [7]	R6,911	R7,291	R7,659	8,503	9,772	10,372	10,877	11,370	R11,027	R13,712
Petroleum [10]	R1,376	R1,334	R1,686	1,730	2,043	2,262	2,116	2,251	R2,924	R2,629
Natural Gas [11]	R15,539	R18,008	R21,056	21,542	23,463	26,925	27,906	30,166	R31,092	R37,325
Petroleum and Natural Gas (dual fired)	R5,179	R6,757	R5,411	8,478	8,505	9,820	10,479	10,912	R10,029	R23,105
Other Gas [12]	([13])	([13])	([13])	([13])	([13])	1,130	R1,199	R298	R16	R198
Nuclear Electric Power	20	20	20	20	20	0	0	0	0	0
Conventional Hydroelectric Power	R2,290	R2,634	R2,656	2,684	2,741	3,364	3,399	3,419	R3,770	R4,136
Geothermal	R1,063	R1,123	R1,136	1,254	1,318	1,335	1,295	1,346	1,303	R1,449
Wood [14]	R5,856	R6,335	R6,824	6,805	7,046	7,416	6,885	7,263	R7,282	R6,887
MSW [15] and LFG [16]	R1,697	R2,063	R2,348	2,361	2,411	2,590	R2,832	2,661	R2,825	R2,868
Other Waste [17]	R255	R433	R556	645	720	561	R616	R830	R589	R626
Wind	R1,696	R1,911	R1,975	1,822	1,813	1,737	1,723	1,670	R1,566	R1,689
Solar [18]	R280	360	360	360	360	354	354	354	354	R385
Other [19]	R196	R207	R499	611	566	597	574	648	R1,229	R3,075

[1] Data for 1989-1991 were collected for facilities with capacities of 5 megawatts or more. In 1992, the threshold was lowered to include facilities with capacities of 1 megawatt or more. Estimates of the 1-to-5 megawatt range for 1989-1991 were derived from historical data. The estimation did not include retirements that occurred prior to 1992 and included only the capacity of facilities that came on line before 1992.

[2] Purchases, interchanges, and exchanges of electric energy with utilities and other nonutilities.

[3] Sales, interchanges, and exchanges of electric energy with utilities.

[4] Sales, interchanges, and exchanges of electric energy with entities other than utilities.

[5] Calculated as the sum of gross generation and receipts minus sales to utilities and end users.

[6] Data are for fuels consumed to produce both electricity and useful thermal output.

[7] Coal, fine coal, anthracite culm, bituminous gob, lignite waste, tar coal, waste coal, and coke breeze.

[8] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.

[9] Natural gas only.

[10] Fuel oil nos. 1, 2, 4, 5, and 6, crude oil, petroleum coke, kerosene, liquid butane, liquid propane, methanol, liquid byproducts, oil waste, sludge oil, and tar oil.

[11] Includes waste heat and waste gas.

[12] Butane, propane, blast furnace gas, coke oven gas, refinery gas, and process gas.

[13] Included in "Natural Gas."

[14] Wood, wood waste, black liquor, red liquor, spent sulfite liquor, pitch, wood sludge, peat, railroad ties, and utility poles.

[15] Municipal solid waste.

[16] Landfill gas.

[17] Methane, digester gas, liquid acetonitrile waste, tall oil, waste alcohol, medical waste, paper pellets, sludge waste, solid byproducts, tires, agricultural byproducts, closed loop biomass, fish oil, and straw.

[18] Solar thermal and photovoltaic energy.

[19] Hydrogen, sulfur, batteries, chemicals, and purchased steam.

[20] Installed capacity is the full-load continuous rating of a generator, prime mover, or other electrical equipment under specified conditions as designated by the manufacturer. It is usually indicated on a nameplate attached physically to the equipment. Installed station capacity does not include auxiliary or house units.

R=Revised. NA=Not available.

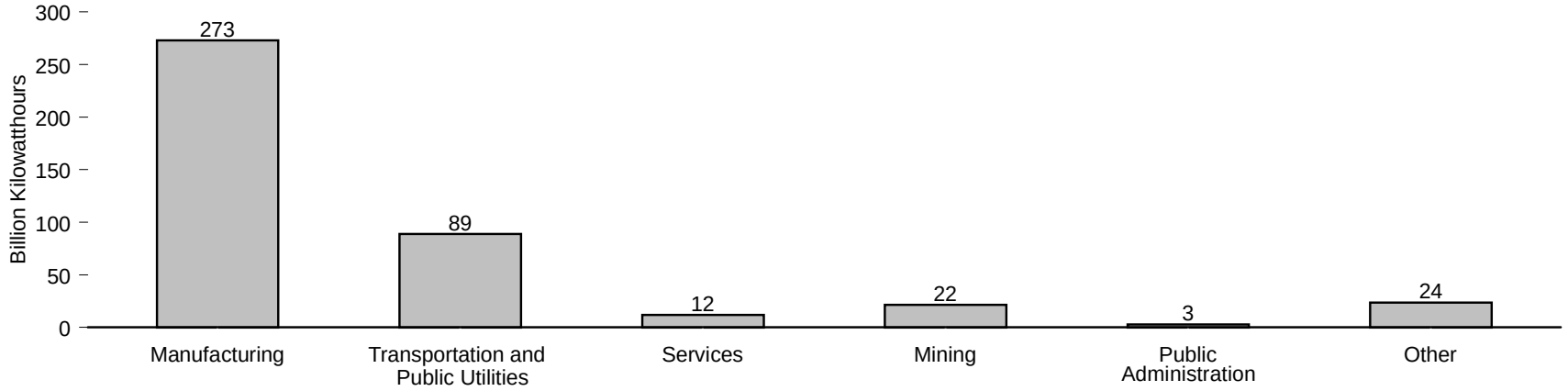
Notes: • Due to restructuring of the electric power sector, the sale of generation assets is resulting in reclassification of plants from electric utility to nonutility plants. • See Note 5 at end of section. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

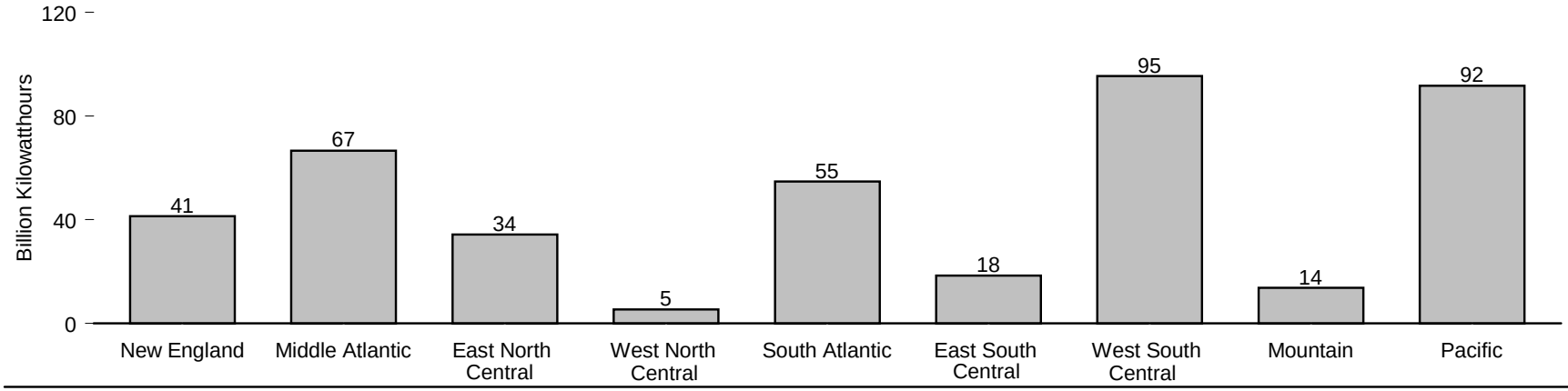
Sources: • 1989-1991—Estimated on the basis of data collected from Form EIA-867, "Annual Nonutility Power Producer Report." • 1992-1993—Energy Information Administration (EIA), *Electric Power Annual,* annual reports. • 1994-1998—EIA, *Electric Power Annual 1998, Volume II* (December 1999).

Figure 8.15 Nonutility Power Producer Gross Generation, 1998

By Producing Energy Group



By Census Division



Notes: • See Appendix D for Census divisions. • Because vertical scales differ, graphs should not be compared.

Source: Table 8.15.

Table 8.15 Nonutility Power Producer Gross Generation, 1998

(Million Kilowatthours)

Census Divisions	Manufacturing	Transportation and Public Utilities	Services	Mining	Public Administration	Other Industry Groups	Total
New England	15,408	19,967	456	—	—	5,521	41,352
Middle Atlantic	46,083	13,024	3,596	1,517	883	1,476	66,579
East North Central	25,430	6,468	2,367	—	17	44	34,325
West North Central	3,143	669	427	1,146	—	21	5,405
South Atlantic	42,059	10,481	772	6	31	1,373	54,720
East South Central	12,955	5,155	92	114	56	—	18,372
West South Central	88,639	5,718	552	368	—	77	95,354
Mountain	5,607	4,287	856	488	—	2,451	13,689
Pacific	33,678	22,928	2,657	17,977	1,562	12,765	91,567
Total	**273,002**	**88,697**	**11,774**	**21,615**	**2,548**	**23,728**	**421,364**

— = Not applicable.

Notes: • Nonutility electric generating facilities with a total generator capacity of 1 megawatt or greater. • Data are based on facilities' consumption. • Totals may not equal sum of components due to independent rounding.

Web Page: http://www.eia.doe.gov/fuelelectric.html.

Source: Energy Information Administration (EIA), *Electric Power Annual 1998, Volume II,* (October 1999), Table 60.

Electricity Notes

1. Electrical system energy losses are estimated as the difference between total energy input at electric utilities and the total energy content of electricity sold to end-use consumers. Most of these losses occur at steam-electric power plants (conventional and nuclear) in the conversion of heat energy into mechanical energy to turn electric generators. This loss is a thermodynamically necessary feature of the steam-electric cycle. Part of the energy input-to-output losses are a result of imputing fossil energy equivalent inputs for hydroelectric and other energy sources, since there is no generally accepted practice for measuring these thermal conversion rates. In addition to conversion losses, other losses include power plant use of electricity, transmission and distribution of electricity from power plants to end-use consumers (also called "line-losses"), and unaccounted-for electricity. Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity sales. Overall, approximately 67 percent of total energy input is lost in conversion; of electricity generated, approximately 5 percent is lost in plant use and 9 percent is lost in transmission and distribution. Calculated electrical energy system losses may be less than actual losses, because primary consumption does not include the energy equivalent of utility purchases of electricity from non-electric utilities and from Canada and Mexico, although they are included in electricity sales.

2. Prior to 1985, electric utility supply and distribution statistics included data reported by institutions (such as universities) and military facilities that generated electricity primarily for their own use. Beginning in 1985, electricity statistics exclude data for these facilities and include data only for those organizations that generate electricity primarily for public use. Beginning in 1989, data for nonutility power producers (cogenerators, small power producers, and independent power producers) are provided.

3. Electric utility net summer capabilities were first collected on Form EIA-860 for 1984. Units not assigned a net summer capability rating by the utility were given an estimated rating by use of a statistical relationship between installed nameplate capacity and net summer capability for each prime mover. To estimate net summer capability for the years 1949 through 1984, two methods were used. For each prime mover except nuclear and "other," net summer capability estimates were calculated in two steps. First, the unit capacity values reported on Form EIA-860 and the unit start dates contained in the 1984 Generating Unit Reference File (GURF) were used to compute preliminary aggregate estimates of annual net summer capability and installed nameplate capacity. These preliminary estimates were obtained by aggregating unit capacity values for all units in service during a given year. Next, the ratio of the preliminary capability to nameplate estimate was computed for each year and multiplied by the previously published installed nameplate capacity values to produce the final estimates of net summer capability. The net summer capability data for nuclear and "other" units were used directly from the 1984 GURF for all years. Historical aggregates were then developed by using the unit start dates on the GURF.

Historical capacity has also been modified to estimate capability based upon the operable definition. This was accomplished by assuming that non-nuclear generating units became operable between 1 and 4 months prior to their commercial operation dates, depending upon the prime mover and time period. The actual operable dates for nuclear units were used. It should be noted that nonutility net summer capabilities, which are not currently collected for nonutilities, are estimated based on installed nameplate capacity data in Table 8.14.

4. Data on electric utility retail sales of electricity represent gross output of electricity (measured at the generator terminals) minus power plant use and transmission and distribution losses. Included in each end-use sector are the following: Commercial Sector–sales of electricity to businesses that generally require less than 1,000 kilowatts of service; Industrial Sector–sales of electricity to businesses that generally require more than 1,000 kilowatts of service; Residential Sector–sales of electricity to residences for household purposes; "Other" Sector–sales of electricity for public street and highway lighting, to public authorities, railways, and railroads, and interdepartmental sales.

5. Year-to-year changes in data from the Form EIA-867, "Annual Nonutility Power Plant Report," can result from correcting misreported data and modifying the frame to account for new or retired facilities, among other improvements. Data for 1989, 1990, and 1991 were collected for facilities of 5 megawatts or more. In 1992, the threshold was lowered to include facilities with capacities of 1 megawatt or more. Estimates of the 1-to-5-megawatt range for prior years were derived from historical data. The estimation did not include retirements that occurred prior to 1992 and included only the capacity of facilities that came on line before 1992.

Electricity Sources

Table 8.1

Net Generation, Electric Utilities: Table 8.3. **Net Generation, Nonutility Power Producers:** Table 8.4. **Imports and Exports:** • 1949-September 1977—unpublished Federal Power Commission data. • October 1977-1980—unpublished Economic Regulatory Administration (ERA) data. • 1981—Department of Energy (DOE), Office of Energy Emergency Operations, "Report on Electric Energy Exchanges with Canada and Mexico for Calendar Year 1981," April 1982 (revised June 1982). • 1982 and 1983— DOE, ERA, *Electricity Exchanges Across International Borders*. • 1984-1986—DOE, ERA, *Electricity Transactions Across International Borders*. • 1987 and 1988—DOE, ERA, Form ERA-781R, "Annual Report of International Electrical Export/Import Data." • 1989–DOE Fossil Energy, Form FE-781R, "Annual Report of International Electrical Export/Import Data." • 1990-1998—Mexico's Data: DOE, Fossil Fuels, Office of Fuels Programs, Form FE-871R, "*Annual Report of International Electrical Export/Import Data*." Canada's Data: National Energy Board of Canada (metered energy, firm and interruptible). • 1999—EIA estimates based on preliminary data from DOE, Fossil Energy, and actual data from the National Energy Board of Canada. **Losses and Unaccounted For:** Calculated as the sum of total net generation and imports minus total end use and exports. **Electric Utility Retail Sales:** Table 8.9. **Nonutility Power Producers**: Table 8.14.

Table 8.8

• 1949-September 1977—Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • October 1977-1981—Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • 1982-1988—Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report." • 1989 forward–EIA, *Electric Power Monthly* (March 2000), Tables 14 and 67.